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Impact of Los Alamos National Laboratory on the Economies of Northern New Mexico and the State as a Whole

Doleswar Bhandari

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University of New Mexico
Bureau of Business and Economic Research



Impact of Los Alamos National Laboratory on the Economies of Northern New Mexico and the State as a Whole

March 2011

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Doleswar Bhandari, PhD

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Doleswar Bhandari

Executive Summary

The University of New Mexico's Bureau of Business and Economic Research (BBER) was commissioned by Los Alamos National Laboratory (LANL) to estimate its economic impacts on northern New Mexico and for the State of New Mexico for fiscal year 2009.

LANL injected more than \$1.4 billion directly into the northern New Mexico economy during FY 2009. These injections provided more than 11,200 direct jobs, nearly \$1.1 billion labor income and \$1.4 billion economic output to the region. LANL's expenditures also indirectly supported approximately 9,300 jobs, more than \$317 million in labor income and \$932 million economic output in this region (Table 3.1). The total economic impact of LANL to the region is approximately 20,531 in employment, \$1.4 billion in labor income, and \$2.3 billion in economic output. In addition, a total of 3,050 LANL retirees with \$140 million in pension benefits are estimated to have supported an additional 821 jobs with \$26 million in labor income (Table 4.1). Northern New Mexico consists of the seven counties of Los Alamos, Santa Fe, Rio Arriba, Sandoval, Taos, San Miguel and Mora.

The impact of \$1.6 billion LANL in-state expenditures in FY 2009 is estimated to have created 11,685 jobs directly (1.44% of all state nonfarm employment) with \$1.1 billion in labor income. These expenditures in the state also indirectly supported 11,956 jobs (indirect and induced) with \$433 million in labor income (Table 3.5). The total economic impact of LANL to the state is 23,641 in employment, \$1.6 billion in labor income, and \$2.9 billion in economic output. Additionally, a total of 3,534 LANL retirees who live in the state added approximately \$156 million in pension benefits into the state economy, supporting 1,087 additional jobs and \$36 million in additional labor income in the State of New Mexico (Table 4.1).

The direct, indirect and induced economic activity associated with LANL's operations and construction generated a total of \$128 million in gross receipts tax revenues across all jurisdictions in the state (Table 5.1) including \$72 million GRT for the state. The property tax revenues totaled approximately \$8.5 million (Tables 5.3-5.5). Santa Fe receives property tax revenues of \$3.5 million, followed by Los Alamos County (\$2.7 million) and Rio Arriba (\$2.3 million). Personal income tax generated from salary payment to LANL employees for the federal and state government is estimated to be \$142 million and \$28 million respectively (Table 5.6).

The IMPLAN Version 3 economic impact model was used to estimate the indirect and induced impacts of LANL. Data were obtained from LANL, the New Mexico Taxation and Revenue Department, the Bureau of Economic Analysis – Regional Economic Accounts, FOR-UNM Economic Forecasting Service and the IMPLAN database. One limitation of this study is the lack of detailed county-level data regarding LANL's expenditures, which may affect the accuracy of the individual county-level results. BBER addressed this issue by using IMPLAN V3 county-by-county trade-flow data.

1 Introduction

The University of New Mexico's Bureau of Business and Economic Research (BBER) was commissioned by Los Alamos National Laboratory (LANL) to estimate its economic impacts on northern New Mexico and for the State of New Mexico for fiscal year 2009. This report presents the results of the study and outlines the data and methods used to arrive at these results.

LANL is the sixth largest employer in New Mexico after Kirtland Air Force Base, the University of New Mexico, the State of New Mexico, Albuquerque Public Schools and Wal-Mart. This study focuses on the economic impacts of LANL operations and employment and of its capital program on northern New Mexico, defined as consisting of Los Alamos, Santa Fe, Rio Arriba, Sandoval, Taos, San Miguel and Mora Counties. Operations of an entity as large as LANL are bound to have impacts beyond the seven-county northern New Mexico study area, because some of the employees who work at LANL come from outside northern New Mexico and because LANL buys goods and services from outside the region. To account for these spillovers BBER estimated statewide impacts.

When conducting this type of economic impact study, BBER starts with the counterfactual assumption of an economy without LANL and then examines the various channels through which LANL's operations and capital program may be expected to affect overall economic activity in the immediate region and statewide. The analysis is a comparative static analysis, which is a comparison of two different economic outcomes, before and after a change in the final demand i.e., the NM economy with and without LANL.

LANL is a multidisciplinary laboratory with a prime responsibility of "maintaining the safety, security and effectiveness" of the nuclear deterrent without nuclear testing. With a national security focus, LANL also works on nuclear nonproliferation and border security, energy and infrastructure security, and countermeasures to nuclear and biological terrorist threats. It conducts fundamental science in high energy and applied physics and theory, high-performance computing, dynamic and energetic material science, superconductivity, quantum information, advanced materials, bioinformatics, theoretical and computational biology, chemistry, earth and environmental science, alternative energy systems, and engineering sciences and applications.

Currently, LANL is operated by Los Alamos National Security (LANS), LLC, a private contractor composed of Bechtel National, the University of California, the Babcock and Wilcox Company, and the URS Corporation, for the Department of Energy's National Nuclear Security Administration¹. While these programs may be expected to have a

¹ Source: 09.08 Fact Sheet, LANL.

long-term impact on the economy, we do not attempt to measure the dynamic impact of its programs and associated technological innovations.

In addition, LANS benefits the northern New Mexico community through its Community Commitment Plan, which invests approximately \$3 million per year in education, economic development, community giving, in-kind and other community investments, technology transfer, and other regional initiatives. LANS also pays taxes to the state and to local governments.

At a functional level, for FY09, more than 49% of LANL's budget goes toward National Nuclear Security Administration (NNSA) weapons programs, with another 7% each going for NNSA nonproliferation and NNSA safeguard and security programs. About 17% of the budget is spent on Department of Energy (DOE) environmental management and energy programs. The remaining 20% is spent on work with other federal agencies and economic stimulus programs.

This study examines how LANL's local spending and employment and the spending of its retirees stimulates the economy and supports a higher level of economic activity. All of the revenues that support LANL's budget and the pension benefits of their retirees come from out-of-state sources, including the Department of Energy and other federal government agencies. The economic and fiscal impacts documented in this report show how the dollars that flow to LANL from out-of-state sources support direct spending on wages and salaries, on employee benefits, and on local goods and services, and how this local spending supports additional economic activity in the northern New Mexico region.

Operations of an entity as large as LANL are bound to have impacts on surrounding regions, if only because some LANL employees live outside Los Alamos County and LANL purchases goods and services within the state but outside of northern New Mexico. In examining the total effects on the economy of New Mexico, this study accounts for the spillovers into other regions.

The rest of the report is organized as follows. Chapter 2 discusses methodology, data sources, and BBER's modeling of LANL's economic impacts using IMPLAN. Chapter 3 presents the results of BBER's analysis of the economic impacts of LANL activities on northern New Mexico and the state. Chapter 4 examines the economic impacts of LANL retirees' pension benefits. Chapter 5 estimates the fiscal impacts of LANL on northern New Mexico counties and municipalities and on the state, giving focus to the gross receipts tax, the property tax and the personal income tax. Chapter 6 examines northern New Mexico impacts by county.

2 Methodology

Although Los Alamos National Laboratory is located in Los Alamos County, many people who work there live in the surrounding counties. LANL also buys goods and services from other parts of northern New Mexico, especially from Santa Fe and Española. To capture the effects on northern New Mexico, BBER modeled the impacts on a study area that consists of seven northern New Mexico counties: Los Alamos, Santa Fe, Rio Arriba, Sandoval, Taos, San Miguel and Mora. We also modeled the impacts on each of these seven counties. Finally, capturing the spillover effects on New Mexico beyond the seven-county region, BBER analyzed the impact to the state as a whole. In summary, impacts have been calculated on three different levels: for the northern NM region, for the state, and for each of the counties within the northern NM region.

This study is based on a generally accepted method of estimating the economic impacts of an existing project or organization, public or private. In its simplest form, this method can be described as an “export-base” method, because it recognizes only those local expenditures that are supported by out-of-area revenues as having a tangible impact on an area’s economy. The rationale behind this method is based upon the assumption that revenues generated from sources within the area would presumably flow to some other activity and yield a positive economic impact if LANL did not exist. In the case of LANL, all operating revenues and all of the revenues available for capital outlay come from the federal government or other out-of-state sources. Therefore, all of the economic activity originating from LANL is characterized as creating impacts.

As in previous studies, BBER estimated the indirect and induced impacts of LANL using the IMPLAN² model and proprietary databases. IMPLAN is a regional economic model that is widely used for conducting economic impact analyses. A regional model consisting of seven counties, a state model and seven separate county models were constructed using 2007 IMPLAN data sets for each model. After constructing each of the models, IMPLAN generates a social accounting matrix which includes detailed information about the flow of dollars and local economic interactions within the specific geographic area, or region in question. This social accounting matrix is the basis for region-specific multipliers used in calculating the economic impacts. Given the diverse activities of LANL, the “Analysis-By-Parts” method was used to estimate the impacts. This method allows the flexibility to incorporate project-specific information.

² Minnesota IMPLAN Group, Inc. IMPLAN System (data and software), 1725 Tower Drive West, Suite 140, Stillwater, MN 55082. <http://www.implan.com>. The IMPLAN model is widely used in conducting economic impact analyses for different regions. BBER used the Version 3 model of IMPLAN which has the capability of calculating multi-region input output analyses by accounting for county to county trade flow.

2.1 Data

LANL provided data on their activities in FY 2009, specifically their revenues and revenue sources and their spending in New Mexico. Expenditures are the main source of impacts. LANL provided detailed information on their operating expenditures, both on employee compensation and on purchases of goods and services. The wage, salary, and benefits information was provided for different employees in different income categories along with their county of residence. The second type of expenditure data collected pertained to LANL contractors. This data contained details on employee compensation and expenditures on goods and services as well as on payments to individual contractors. Third, LANL provided estimates of their total spending on different types of construction projects. The analysis made use of not only the IMPLAN software but also their proprietary databases on New Mexico counties and the state as a whole. For the fiscal impact analysis, information on FY 2009 tax rates and on total and taxable gross receipts was obtained from the New Mexico Taxation and Revenue Department. Information on property tax rates was obtained from the New Mexico Local Government Division.

2.2 Method

The basic premise behind the method used in this study is described above. The following steps were taken to estimate the economic impacts of LANL employment and spending on northern New Mexico and the state.

2.2.1 Revenues

Sources of revenue are important when estimating economic impacts. If revenue is obtained from local sources, the revenue would theoretically have alternative uses, which would have impacts on the local economy. Since all of LANL's funding comes from out-of-state sources, all the expenditures made in the region and the state will give rise to economic impacts. Table 2.1 presents LANL's sources of revenue in fiscal year 2009. As can be seen from the table, most of the money which supports the operations and capital program is provided by federal government agencies, primarily the Department of Energy.

Table 2.1 Summary of Revenue Sources, FY09

Programs	Amount (\$Million)
NNSA ¹ Weapons Programs	\$1,239
NNSA Nonproliferation	\$169
NNSA Safeguards and Security	\$169
DOE ² Environmental Management	\$232
DOE Energy and Other Programs	\$94
DOE Office of Science	\$100
Work for Others	\$92
Work for Others (National Security)	\$188
Stimulus	\$233
Total	\$2,516

Source: LANL

¹ National Nuclear Security Administration

² U.S. Department of Energy

2.2.2 Expenditures

With virtually all their revenue provided by the federal government, the impact of LANL operations on northern New Mexico and on the state depends critically on their spending within the state. The following formula gives an overview of how direct impacts were estimated:

$$\text{Direct Impact} = (\% \text{ Non-local Revenues}) \times (\% \text{ Local Expenditures}) \times (\text{Total Expenditures})$$

Table 2.2 provides details of LANL expenditures. Figure 2.1 presents the percentage of total expenditures by employee compensation, purchases of goods and services, construction, and management fee and taxes. As mentioned above, all of LANL's funding comes from out-of-state sources. Additionally, according to the IMPLAN trade flow model, about 74% of expenditures occur in New Mexico creating indirect and induced jobs and income to New Mexico residents.

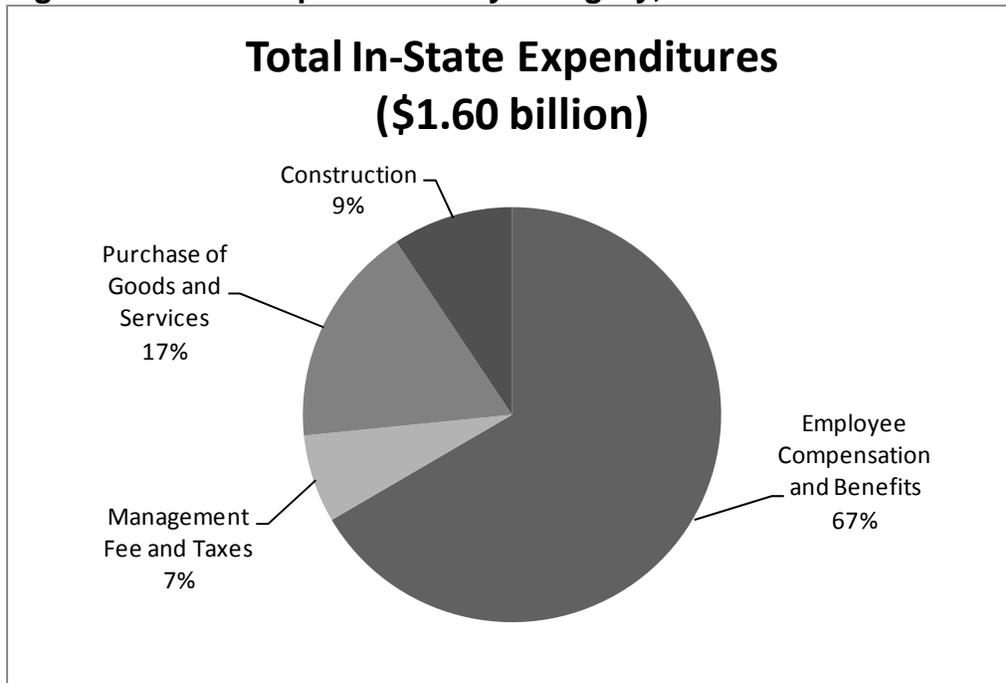
In fiscal year 2009, LANL injected \$1.6 billion in operating and capital expenditures into the State of New Mexico (Table 2.2). The \$1.6 billion in in-state LANL expenditures included \$1.1 billion in employee compensation including contractors (\$1.2 billion minus \$123 million sent out-of-state), \$276 million in purchases of goods and services (\$654 million minus \$378 million sent out-of-state), and \$107 million in management fee and taxes (\$173 million minus \$66 million sent out-of-state), and \$150 million in construction. In addition to the above, LANL had 3,534 retirees who lived in New Mexico and spent some of their \$156 million in LANL pension benefits on local goods and services.

Table 2.2 LANL Expenditures, FY09

Expenditure Category	Amount (\$ Millions)
Employee Compensation and Benefits	\$1,051
Craft Employee Compensation	\$61
Other Contractors	\$77
SOC Security Contractors	\$50
Temporary Contractors	\$27
Purchase of Good and Services	\$654
Travel	\$40
Materials	\$99
Services	\$391
Equipment	\$62
Utilities	\$62
Construction	\$150
Management Fee and Taxes	\$175
Total Expenditures (In-State and Out-of-State)	\$2,168
Out-of-State Expenditures on Goods and Services	-\$378
Out-of-State Expenditures on employee compensation	-\$123
Out-of-State Expenditures on Payment to Management Fee	-\$66
Total In-State Expenditures	\$1,601

Source: LANL

Figure 2.1 LANL Expenditures by Category, FY09



2.2.3 Employment

LANL expenditures support 11,685 direct in-state employment including regular staff (7,303), contractors (1,601), students (782), limited term employees (350), postdoctoral researchers (273), construction workers (1,357), and others (Table 2.3). Appendix A displays LANL's employment numbers by county. Compensation

Table 2.3 Employment Related Directly to LANL in FY 2009

Employment Type	Number
Employees on LANL Payroll	8,727
Regular employees	7,303
Students	782
Limited term employees	350
Postdoctoral	281
Long-term visiting staff members	11
Contractors	1,601
SOC security contractors	463
SE security contractors	368
Individual contractors	332
Temporary contractors	438
Construction employment	1,357
Total In-State Direct Employment	11,685

Source: LANL

2.2.4 Modeling with IMPLAN

The IMPLAN Model databases draw from a variety of data sources to develop an input-output table appropriate for an individual county or other geographic unit and can be used to estimate the total economic impacts of economic activity. **Direct impacts** come from LANL operations, e.g., payroll employment, local purchases on goods and services, and from LANL capital outlays such as construction projects. **Indirect impacts** occur as a result of spending by New Mexico companies from which LANL buys goods and services. This spending creates a demand for the goods and services of local companies, which must then subsequently purchase their own goods and services to produce their product. The sum total of these iterative purchases is termed indirect impacts. **Induced impacts** result when the employees supported by LANL activities spend their earnings on items such as housing, food, clothing, or childcare. This spending *induces* additional employment in many sectors of the economy, such as jobs at the local grocery store. IMPLAN was used to estimate the indirect and induced impacts.

Direct, indirect and induced impacts combined yield the total economic activity that results from the share of LANL expenditures supported by out-of-state revenues. Dividing the total of direct, indirect and induced impacts by the original total direct expenditures results in a **multiplier**, a measure of economic activity generated per dollar or per employee. For example, the 2009 employment multiplier for LANL in

northern NM was estimated as 1.91. This means that every 100 jobs in LANL supported an additional 91 jobs outside LANL.

IMPLAN is a flexible tool. In addition to allowing one to use project-specific information where available, IMPLAN makes it possible to break down the analysis into component parts when the model default information does not conform with that supplied by the project – e.g., to separately model the impacts of employment and those of local purchases from suppliers. IMPLAN further allows multi-region analysis in which economic impacts in two or more regions are determined as a result of final demand change in one region.

3 Economic Impacts of LANL on northern New Mexico and the State

Total LANL funding in FY 2009 was about \$2,516 million (Table 2.1). Approximately \$1,577 million (63%) was obtained from the National Nuclear Security Administration (NNSA) and about \$426 million (17%) was obtained from the U.S. Department of Energy. An additional \$233 million (9%) was obtained as economic stimulus money. The remaining \$280 million (11%) was obtained primarily from other federal agencies. Since all LANL activities are supported by out-of-state revenue sources, all LANL activities are characterized as creating economic impacts. Out of \$2.5 billion in revenue, nearly \$2.2 billion was expended during 2009. Out of this \$2.2 billion expenditure, \$1.6 billion was circulated in the State of New Mexico (Table 2.2). Additionally, in FY 2009 LANL had 3,534 retirees who lived in New Mexico and spent some of their \$156 million in LANL pension benefits on local goods and services. Economic impacts of LANL retirees and pension benefits are not included in this chapter, but are analyzed separately in the fourth chapter of this report.

3.1 LANL Impact on northern New Mexico

Table 3.1 presents the direct, indirect, induced and total economic impacts of LANL on northern New Mexico. It includes impacts associated with expenditures on operations and construction that occurred in northern New Mexico. The total economic impact to the region is approximately 20,531 in employment, \$1.4 billion in labor income, \$1.7 billion in value added, and \$2.3 billion in economic output. The multiplier (total impact divided by direct impact) is 1.83 in employment and 1.3 in labor income in northern New Mexico. LANL generated 11,233 in direct employment, which accounts for 8.1% of the northern region's wage and salary employment.³

³ Calculated as the percentage of LANL's direct employment to two-quarter average of wage and salary data of QCEW, Bureau of Labor Statistics.

Table 3.1 Total Economic Impacts of LANL on the Economy of Northern New Mexico, FY09

Impact Type	Number of Employees¹	Labor Income² (\$ millions)	Value Added³ (\$ millions)	Output⁴ (\$ millions)
Direct	11,233	\$1,085.3	\$1,131.5	\$1,382.3
Indirect	2,868	\$116.6	\$171.0	\$288.4
Induced	6,430	\$201.2	\$379.1	\$643.5
Total	20,531	\$1,403.1	\$1,681.6	\$2,314.2
UNM Bureau of Business and Economic Research				
¹ Direct Employees = LANL operations and construction employees				
² Direct Labor Income = LANL operations and construction employee compensation including benefits				
³ Value Added = employee compensation, proprietor income, other property income and indirect business taxes				
⁴ Direct Output = LANL total expenditures on operations and construction				

3.1.1 Operations Impact

BBER separately estimated operating impacts associated with LANL’s local spending within the seven-county region based on employee compensation for different categories such as regular employees, security contractor employees, and temporary employees. Separate impact estimation was conducted for expenditures on purchases of goods and services. The direct, indirect, induced and total impacts of these expenditures on the economy of northern New Mexico appear in Table 3.2. It is estimated that 9,818 direct jobs and more than \$1 billion in labor income produced an additional 8,475 indirect and induced jobs and \$289 million in indirect and induced labor income, resulting in a total impact of approximately 18,293 jobs and \$1.3 billion in labor income.

Table 3.2 Total Operations Impacts by LANL on the Economy of northern New Mexico, FY09

Impact Type	Number of Employees¹	Labor Income² (\$ millions)	Value Added³ (\$ millions)	Output⁴ (\$ millions)
Direct	9,818	\$1,029.9	\$1,071.9	\$1,232.3
Indirect	2,481	\$101.2	\$149.4	\$246.7
Induced	5,994	\$187.5	\$353.4	\$599.9
Total	18,293	\$1,318.6	\$1,574.6	\$2,078.8

UNM Bureau of Business and Economic Research
¹ Direct Employees = LANL operations employees (regular employees and contract workers)
² Direct Labor Income = LANL operations employee compensation including benefits
³ Value Added = employee compensation, proprietor income, other property income and indirect business taxes
⁴ Direct Output = LANL total expenditures on operations including both payroll and goods and services

3.1.2 Construction Impact

Table 3.3 presents LANL's construction expenditures over time. Construction expenditures have generally increased since 2004. BBER estimated 2009 construction expenditures as being consistent with the historical trend and used this to estimate the impact.

Table 3.3 Construction Expenditures by Fiscal Year

Fiscal Year	Construction Expenditure (\$ Millions)
2004	41
2005	99
2006	93
2007	103
2008	131
2009	150

Source: LANL

Table 3.4 presents the direct, indirect, induced and total construction impacts on northern New Mexico. Construction spending of \$150 million within the region supported \$85 million in additional output. It is estimated that about 2,238 jobs results from LANL construction, which includes approximately 387 indirect and 436 induced jobs.

Table 3.4 Total Construction Impacts by LANL on the Economy of northern New Mexico, FY09

Impact Type	Number of Employees¹	Labor Income² (\$ millions)	Value Added³ (\$ millions)	Output⁴ (\$ millions)
Direct	1,415	\$55.4	\$59.7	\$150.0
Indirect	387	\$15.4	\$21.7	\$41.7
Induced	436	\$13.7	\$25.7	\$43.6
Total	2,238	\$84.5	\$107.0	\$235.4
UNM Bureau of Business and Economic Research				
¹ Direct Employees = LANL construction employees				
² Direct Labor Income = LANL construction employee compensation including benefits				
³ Value Added = employee compensation, proprietor income, other property income and indirect business taxes				
⁴ Direct Output = LANL total expenditures on construction				

3.2 Impacts on the State of New Mexico

As noted previously, some of LANL’s direct operating expenditures spill over into other counties of New Mexico. First, while the majority (95%) of LANL employees reside in northern New Mexico, nearly 4% reside in other parts of the state. While employees often shop near where they work, many goods and services are likely to be purchased closer to home. Second, LANL’s procurement of goods and services may draw from New Mexico vendors outside northern New Mexico. Finally, some of the indirect and induced impacts of LANL spending within northern New Mexico spill over into other counties. Because of this situation, BBER extended its analysis of the impacts of LANL operations to the state as a whole. Table 3.5, Table 3.6 and Table 3.7 replicate the analyses summarized in Table 3.1, Table 3.2, and Table 3.4 respectively for an expanded geography.

Table 3.5 presents the direct, indirect, induced and total economic impacts of LANL on the State. It includes impacts associated with expenditures on operations and construction that occurred in New Mexico. The total economic impact to the State is 23,641 in employment, \$1.6 billion in labor income, \$2 billion in value added, and nearly \$2.9 billion in economic output. Table 3.8 presents the percentage point difference between the impacts on the northern New Mexico region and on the state. The multiplier (total impact /direct impact) is 2.02 in employment, 1.40 in labor income and 1.8 in output for the State of New Mexico. Please note that the direct employment number for construction in northern NM is slightly more than that of the state due to higher average employee compensation in the IMPLAN model for the state than that of the northern NM region. However, as expected, the total impacts to the state are higher than that of the northern NM region.

Table 3.5 Total Economic Impacts of LANL on the State of New Mexico, FY09

Impact Type	Number of Employees¹	Labor Income² (\$ millions)	Value Added³ (\$ millions)	Output⁴ (\$ millions)
Direct	11,685	\$1,124.5	\$1,222.5	\$1,601.7
Indirect	3,944	\$171.5	\$245.2	\$403.3
Induced	8,012	\$261.7	\$483.4	\$864.5
Total	23,641	\$1,557.7	\$1,951.1	\$2,869.5

UNM Bureau of Business and Economic Research
¹ Direct Employees = LANL operations and construction employees
² Direct Labor Income = LANL operations and construction employee compensation including benefits
³ Value Added = employee compensation, proprietor income, other property income and indirect business taxes
⁴ Direct Output = LANL total expenditures on operations and construction

Table 3.6 Total Operations Impacts by LANL on the State of New Mexico, FY09

Impact Type	Number of Employees¹	Labor Income² (\$ millions)	Value Added³ (\$ millions)	Output⁴ (\$ millions)
Direct	10,328	\$1,066.2	\$1,159.5	\$1,451.7
Indirect	3,516	\$151.6	\$215.8	\$343.4
Induced	7,487	\$244.4	\$451.7	\$807.5
Total	21,330	\$1,462.2	\$1,827.1	\$2,602.6

UNM Bureau of Business and Economic Research
¹ Direct Employees = LANL operations employees (regular employees and contract workers)
² Direct Labor Income = LANL operations employee compensation including benefits
³ Value Added = employee compensation, proprietor income, other property income and indirect business taxes
⁴ Direct Output = LANL total expenditures on operations including both payroll and goods and services

Note: Totals may not sum due to rounding.

Table 3.7 Total Construction Impacts by LANL on the State of New Mexico, FY09

Impact Type	Number of Employees¹	Labor Income² (\$ millions)	Value Added³ (\$ millions)	Output⁴ (\$ millions)
Direct	1,357	\$58.4	\$62.9	\$150.0
Indirect	429	\$19.9	\$29.4	\$59.9
Induced	525	\$17.3	\$31.7	\$57.0
Total	2,310	\$95.6	\$124.0	\$266.9

UNM Bureau of Business and Economic Research

¹ Direct Employees = LANL construction employees

² Direct Labor Income = LANL construction employee compensation including benefits

³ Value Added = employee compensation, proprietor income, other property income and indirect business taxes

⁴ Direct Output = LANL total expenditures on construction

Note: Total may not sum due to rounding.

Table 3.8 Percent Difference Between LANL's Impacts on northern New Mexico and the State by Type of Impact (percent higher than northern New Mexico)

Type of Impact	Employment	Labor Income	Value Added	Output
Operations	15%	11%	16%	24%
Operations	17%	11%	16%	25%
Construction	3%	13%	16%	13%
Retirees	19%	15%	17%	23%

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4 Retirees' Impact

The economic impact of LANL also includes the expenditures associated with its retirees since many of them are living (and spending) in New Mexico.

4.1 Retirees' Impact

Out of 3,534 retirees who live in New Mexico, 3,050 live in the northern New Mexico region and receive \$140 million in pension benefits that support their spending within New Mexico (Appendix C.2). Retirement payments were reduced by effective federal and state tax rates to estimate the disposable income available for purchases. Table 4.1 presents the economic impact of retirees in northern New Mexico and the state, and by county in Table 4.2. BBER estimated that retirees spend \$111 million of their pension income in New Mexico, resulting in an additional 821 jobs with \$26 million in labor income in northern New Mexico. At the state level, a total of 3,534 retirees bring \$156 million and spend about \$123.5 million, creating an impact of about 1,100 jobs and \$36 million in labor income.

Table 4.1 Economic Impacts of LANL Retiree Expenditures in northern New Mexico and in the State

Impact Type	Number of Employees	Labor Income (\$ millions)	Value Added (\$ millions)	Output (\$ millions)
Northern NM	821	\$26.2	\$47.5	\$80.6
New Mexico	1,087	\$36.1	\$64.6	\$116.5

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Table 4.2 Estimation of Induced Impacts of LANL Retiree Spending by County

County¹	Number of Employees	Labor Income (\$ thousands)	Value Added (\$ thousands)	Output (\$ thousands)
Los Alamos	236	\$8,358	\$16,853	\$28,036
Santa Fe	355	\$11,568	\$19,536	\$33,025
Rio Arriba	171	\$4,741	\$8,099	\$14,277
Sandoval	37	\$971	\$2,018	\$3,483
Taos	20	\$521	\$931	\$1,595
San Miguel	2	\$53	\$93	\$176
Mora	0	\$6	\$15	\$26
7-County Total	821	\$26,219	\$47,545	\$80,619
New Mexico Total	1,087	\$36,120	\$64,624	\$116,474

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¹ Additional impacts by County in Northern New Mexico are presented in Chapter 6

5 Revenue Impacts of LANL on Los Alamos, Santa Fe and Rio Arriba Counties and the State

This chapter examines the revenue impacts of LANL on Los Alamos, Santa Fe and Rio Arriba Counties and the state. Most significantly, BBER estimated that LANL, which is now a private-contractor-run facility, generated an estimated total of \$128 million in gross receipts tax (GRT) revenues to state and local governments during the 2009 federal fiscal year. During the same period, a total of \$8.5 million in property taxes are estimated to have been collected by various local jurisdictions. Besides GRT and property tax, BBER also estimated \$142 million and \$28 million personal income tax paid by LANL employees to federal and state government, respectively.

5.1 Gross Receipts Tax Impacts

Table 5.1 presents BBER's estimates of the gross receipts tax revenues to different taxing jurisdictions that benefitted indirectly from LANL operating and construction expenditures in Fiscal Year 2009. The direct, indirect and induced economic activity associated with LANL's operations and construction generated an estimated total of \$128 million in gross receipts tax revenues across all jurisdictions in the state. According to BBER's estimates, the state's revenues were about \$72 million. More than \$46 million GRT was estimated to be retained within Los Alamos County, \$7 million retained within Santa Fe County and \$2.5 million within Rio Arriba County.

Table 5.1 Gross Receipt Taxes Resulting From LANL Operations and Construction, FY09

Jurisdictions	Total Gross Receipts Tax Impact¹ (\$ thousands)
Los Alamos County	\$46,690
Santa Fe County	\$7,066
Rio Arriba County	\$2,559
State Grand Total	\$71,817
All Jurisdictions Total	\$128,132

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¹ Includes direct GRT and GRT estimated from indirect and induced impacts

5.2 Property Tax Impacts

Table 5.2, Table 5.3, Table 5.4, and Table 5.5 show the estimation of additional property value and property taxes associated with LANL employment in Los Alamos,

Santa Fe and Rio Arriba Counties. BBER estimates the additional population in these counties resulting from increased indirect and induced employment associated with LANL. The number of additional households was estimated on the basis of an average of 2.42 people per household and each county's home-ownership ratio. Total property value was obtained by multiplying the number of houses with the median house value (adjusted to 2009 dollars) obtained from American Economic Survey and Census 2000. Finally, taxable property value was estimated using an assessment of 33%.

The property tax revenues to the listed jurisdictions total approximately \$8.5 million. Estimation shows that Santa Fe has the highest property tax revenue at \$3.5 million followed by Los Alamos County (\$2.7 million) and Rio Arriba (\$2.3 million).

Table 5.2 Estimation of Additional Property Value Associated with LANL Employment

Estimation of Property Value	Los Alamos	Santa Fe	Rio Arriba
Total Employment by County	8,797	6,392	3,768
Population Increment	7,323	7,381	7,599
Additional Housing Units (owner and renter)	3,026	3,050	3,140
Home Ownership Rate	79%	72%	79%
Additional Owner Occupied Houses	2,380	2,202	2,486
Median House Value	\$247,080	\$296,500	\$154,200
Total Property Value	\$587,941,124	\$652,965,796	\$383,395,125

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Table 5.3 Estimation of Property Taxes for Los Alamos County

Assessment Ratio	0.33	
Taxable Property Value¹	\$160,158,370	
Tax Jurisdiction	Property Tax Rate (Mills)	Tax Amount
State Debt Service	1.250	\$200,198
County Operational	4.594	\$735,768
Municipal Debt Service	3.457	\$553,667
School District Operational	0.263	\$42,122
School District Debt Service	3.263	\$522,597
HB 33 School Building	3.246	\$519,874
UNM Los Alamos Branch	0.882	\$141,260
Total	16.955	\$2,715,485

UNM Bureau of Business and Economic Research

¹ Taxable Property Value = (Total Property Value x 0.85 x 0.33) - (\$2000 x Additional Owner Occupied Houses)

Table 5.4 Estimation of Property Taxes for Santa Fe County

Assessment Ratio	0.33	
Taxable Property Value¹	\$178,752,415	
Tax Jurisdiction	Property Tax Rate (Mills)	Tax Amount
State Debt Service	1.250	\$223,441
County Operational	4.507	\$805,637
County Debt Service	1.969	\$351,964
Municipal Operational	1.055	\$188,584
Municipal Debt Service	0.461	\$82,405
School Dist. Operational	0.115	\$20,557
School Dist. Debt Service	3.413	\$610,082
School Dist. Cap. Improve.	2.000	\$357,505
HB33 School Building	1.454	\$259,906
Santa Fe Comm.Col.(1)	2.114	\$377,883
Santa Fe Col.Bldg.Levy (1)	1.046	\$186,975
Total	19.384	\$3,464,937

UNM Bureau of Business and Economic Research

¹ Taxable Property Value = (Total Property Value x 0.85 x 0.33) - (\$2000 x Additional Owner Occupied Houses)

Table 5.5 Estimation of Property Taxes for Rio Arriba County

Assessment Ratio	0.33	
Taxable Property Value	\$102,569,633	
Tax Jurisdiction	Property Tax Rate (Mills)	Tax Amount
State Debt Service	1.250	\$128,212
County Operational	4.406	\$451,922
Municipal Operational	3.495	\$358,481
School District Operational	0.254	\$26,053
School District Debt Service	8.129	\$833,789
School Dist. Cap. Improvement	2.000	\$205,139
County Hospital	3.037	\$311,504
Total	22.571	\$2,315,099

UNM Bureau of Business and Economic Research

¹ Taxable Property Value = (Total Property Value x 0.85 x 0.33) - (\$2000 x Additional Owner Occupied Houses)

5.3 Personal Income Tax Impact

Table 5.6 presents the BBER's estimates of personal income tax for the federal and state government due to LANL's employee compensations. Personal income tax for the state is estimated using the Institute of Taxation and Economic Policy, one of the leading non-profits in distributional analysis of tax systems in the United States. It estimates tax percentages for each taxable income bracket. BBER recognizes that estimating a personal income tax for the federal government is complicated and utilizes the following key assumptions to simplify the process. These assumptions are: 1) Each employee is married and files jointly, 2) A family has only one source of income, 3) Each employee's qualified plan contribution is 5,000, 4) The number of standard/Itemized deductions are two (each deduction is \$5,700), 5) Personal exemptions for this family amount to \$7,300 for those who earn less than \$250,200 in taxable income, and 6) A family has only one child and receives a child tax credit of \$1000 if the family income is less than \$110,000 in taxable income. Tax rate schedules for both federal and state government are presented in Appendix D.

Table 5.6 Estimation of Personal Income Tax for Federal and State Government

Type of Employment	Federal	State
Employee on LANL Payroll	\$133,697,026	\$26,205,550
Contractors' Employee	\$8,179,995	\$1,812,228
Total	\$141,877,020	\$28,017,778

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6 Impacts by County

As mentioned in the first chapter, BBER used a multi-region input-output model to fill the county-level goods and services purchases data gap. This allowed for a multi-region analysis in which the economic impacts in six neighboring counties were determined as a result of LANL activities in Los Alamos County.

Table 6.1 presents the indirect impact of LANL activities by county. The companies supplying goods and services to LANL also purchase goods and services from other producers. These producers, in turn, purchase goods and services. These indirect purchases continue until leakages from the region stop the cycle. Los Alamos County is impacted the most in terms of labor income and output, followed by Santa Fe and Rio Arriba counties. In terms of employment, Santa Fe County is affected the most.

Table 6.2 presents the induced impact of LANL activities by county. Induced impacts are the results of additional consumer spending that is generated by the increase in labor income within the region as a result of the direct and indirect effects of LANL's economic activity. This does not include the retiree impacts. Santa Fe experiences the greatest impact in all categories – employment, labor income, value added and output – followed by Los Alamos and Rio Arriba counties. About 73% of the indirect impact of output is captured by northern New Mexico whereas only 75% of the induced impact is captured by the same region.

Table 6.3 presents the total indirect and induced impacts by county. Santa Fe receives the greatest economic impacts in employment, income and output followed by Los Alamos and Rio Arriba counties.

Table 6.1 Estimation of Indirect Impacts by County

County	Number of Employees	Labor Income (\$ thousands)	Value Added (\$ thousands)	Output (\$ thousands)
Los Alamos	1,129	\$60,587	\$85,311	\$136,542
Santa Fe	1,265	\$43,433	\$65,556	\$112,516
Rio Arriba	327	\$9,429	\$12,795	\$26,520
Sandoval	38	\$1,495	\$3,004	\$5,712
Taos	99	\$1,434	\$4,083	\$6,517
San Miguel	8	\$175	\$244	\$535
Mora	2	\$37	\$50	\$93
7-County Total	2,868	\$116,592	\$171,044	\$288,435
New Mexico Total	3,944	\$171,518	\$245,167	\$403,324

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Table 6.2 Estimation of Induced Impacts by County

County	Number of Employees	Labor Income (\$ thousands)	Value Added (\$ thousands)	Output (\$ thousands)
Los Alamos	1,848	\$64,134	\$134,365	\$223,774
Santa Fe	2,779	\$88,762	\$155,753	\$263,599
Rio Arriba	1,340	\$36,376	\$64,570	\$113,959
Sandoval	293	\$7,453	\$16,085	\$27,799
Taos	154	\$4,001	\$7,425	\$12,734
San Miguel	16	\$408	\$741	\$1,404
Mora	2	\$50	\$119	\$208
7-County Total	6,430	\$201,183	\$379,058	\$643,478
New Mexico Total	8,012	\$261,684	\$483,431	\$864,459

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Note: Totals may not sum due to rounding.

Table 6.3 Estimation of Total Indirect and Induced Impacts by County

County	Number of Employees	Labor Income (\$ thousands)	Value Added (\$ thousands)	Output (\$ thousands)
Los Alamos	2,977	\$124,721	\$219,676	\$360,316
Santa Fe	4,044	\$132,195	\$221,309	\$376,115
Rio Arriba	1,667	\$45,805	\$77,365	\$140,479
Sandoval	331	\$8,948	\$19,090	\$33,511
Taos	253	\$5,436	\$11,508	\$19,251
San Miguel	24	\$584	\$985	\$1,939
Mora	4	\$87	\$169	\$301
7-County Total	9,298	\$317,775	\$550,101	\$931,913
New Mexico Total	11,956	\$433,202	\$728,598	\$1,267,784

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Note: Totals may not sum due to rounding.

Appendix A

LANL Employment by County

Appendix A.1 Number of LANL's Employees by County

County	Employees on LANL Payroll ¹	Security Contractor Employees	Others (including temporary jobs)	Total Employees
Los Alamos	4,457	246	302	5,005
Santa Fe	2,045	171	141	2,357
Rio Arriba	1,511	282	137	1,930
Sandoval	312	62	30	404
Bernalillo	193	-	-	193
Taos	125	33	21	179
Eddy	32	-	-	32
San Miguel	19	-	-	19
Valencia	8	-	-	8
Socorro	5	-	-	5
Dona Ana	6	-	-	6
Mora	4	4	-	8
San Juan	3	-	-	3
Catron	1	-	-	1
Cibola	1	-	-	1
Torrance	1	-	-	1
Luna	1	-	-	1
Lea	1	-	-	1
Grant	1	-	-	1
Mckinley	1	-	-	1
Total	8,727	798	631	10,156

Source: LANL

¹ LANL employees include regular, limited term, long-term visiting staff, DPD, postdoctoral and student (high school, undergraduate, graduate) employees

Appendix B

Expenditure on Goods and Services and Community Investment Expenditures

Appendix B.1 ASM Expenditures on Goods and Services by Category

Expenditures on Goods and Services	In-State Expenditures	Out-of-State Expenditures	Total Expenditures
Services	\$50,246,017	\$145,838,748	\$196,084,765
Business Services	\$10,233,477	\$14,223,573	\$24,457,050
Consulting Services	\$1,049,315	\$5,891,472	\$6,940,787
Research and Development	\$2,158,074	\$15,759,678	\$17,917,752
Safety and Security Services	\$2,970,276	\$6,960,607	\$9,930,883
Professional Services	\$13,590,940	\$29,129,162	\$42,720,102
Project Management Services	\$4,272,560	\$0	\$4,272,560
General Support Services	\$10,568,872	\$65,257,122	\$75,825,994
Equipment Maint/Repair/Calibration Svcs	\$3,686,117	\$2,975,647	\$6,661,764
Facilities Maintenance and Repair	\$377,648	\$3,257,004	\$3,634,652
Training	\$1,338,737	\$2,384,483	\$3,723,220
Goods/Materials/Supplies	\$85,857,968	\$66,243,831	\$152,101,799
General Commodities	\$47,963,254	\$27,768,088	\$75,731,342
Performance Fabrications	\$25,000	\$74,285	\$99,285
Pcard (NM and non-NM)	\$8,229,401	\$38,401,458	\$46,630,859
JIT NM	\$8,279,701	\$0	\$8,279,701
iProcurement NM	\$21,360,612	\$0	\$21,360,612
Engineering	\$27,128,496	\$34,696,860	\$61,825,356
Architectural and Engineering Services	\$14,544,065	\$22,812,576	\$37,356,641
Design Fabrication Services	\$1,644,956	\$750,208	\$2,395,164
Engineering Services	\$10,939,476	\$11,134,076	\$22,073,552
Construction	\$21,379,991	\$0	\$21,379,991
New	\$7,017,906	\$0	\$7,017,906
Renovation	\$4,121,438	\$0	\$4,121,438
Infrastructure	\$9,973,056	\$0	\$9,973,056
Decontamination and Demolition	\$267,591	\$0	\$267,591
Environmental	\$23,589,098	\$84,994,762	\$108,583,860
Demolition and Demobilization Services	\$53,360	\$0	\$53,360
Environmental Remediation Services	\$23,535,738	\$84,994,762	\$108,530,500
Information Technology	\$38,539,461	\$46,611,881	\$85,151,342
Database Services	\$124,577	\$3,426,622	\$3,551,199
Software Engineering/Design Services	\$298,674	\$1,885,525	\$2,184,199
Software licenses/maintenance	\$5,523,272	\$16,280,037	\$21,803,309
IT Equipment and Accessories	\$32,592,938	\$25,019,697	\$57,612,635
Real Property	\$5,891,409	\$108,868	\$6,000,277
SOC Security Operation	\$20,641,444	\$0	\$20,641,444
Los Alamos County Fire Department	\$1,093,000	\$0	\$1,093,000
Construction Craft (formerly KSL)	\$30,227,375	\$0	\$30,227,375
Total ASM Purchases	\$304,594,259	\$378,494,950	\$683,089,209

Source: LANL

Appendix B.2 Direct Community Investments

Direct Community Investments from Fee		Amount (\$) FY09
Education		1,019,653
Los Alamos Employees' Scholarship Fund - Regional	169,653	
LANL Foundation - Regional	450,000	
UNM LA - LA County	100,000	
NNMC- Rio Arriba	100,000	
Highlands University- San Miguel	100,000	
Santa Fe Community College- Santa Fe	100,000	
Economic Development		1,000,000
Northern New Mexico Connect - Regional	650,000	
Venture Acceleration Fund - Regional	350,000	
Community Giving		1,052,627
United Way of Santa Fe County	79,210	
United Way of Northern New Mexico	817,852	
Community Giving Grants	75,000	
Volunteer Recognition Event - Regional	80,565	
Total		3,072,280

Appendix B.3 In-Kind and Other Investments

In-Kind and Other Investments (Community Support)	Amount (\$) FY09
Rio Arriba	9,634
Santa Fe	5,125
Los Alamos	25,592
Taos	550
Statewide	122,800
Total	163,701

Appendix B.4 New Mexico Small Business Assistance

Memberships, Sponsorships and NMSBA	Amount (\$) FY09
Memberships and Sponsorships	39,175
Rio Arriba	7,175
Los Alamos	5,000
San Miguel	3,000
Santa Fe	6,500
Taos	4,000
Statewide	13,500
New Mexico Small Business Assistance (NMSBA)	2,500,000
Tax Credit	1,800,000
In-kind support (overhead for NMSBA projects)	700,000

Appendix C

Expenditures on Employees and Retirees

Appendix C.1 Expenditures on LANL Employees by County

County	No. of Employees	Total Salary
Los Alamos	4,457	\$556,626,344
Santa Fe	2,045	\$238,088,680
Rio Arriba	1,511	\$122,492,649
Sandoval	312	\$33,230,102
Bernalillo	193	\$19,915,657
Taos	125	\$10,686,969
Eddy	32	\$3,808,689
San Miguel	19	\$1,713,940
Valencia	8	\$848,734
Socorro	5	\$366,546
Doña Ana	6	\$343,751
Mora	4	\$250,299
San Juan	3	\$227,796
Catron	1	\$158,105
Cibola	1	\$105,156
Torrance	1	\$97,026
Luna	1	\$71,779
Lea	1	\$50,794
Grant	1	\$36,622
McKinley	1	\$35,469
Grand Total	8,727	\$989,155,104

Source: LANL

Appendix C.2 Number of Retirees and Retirement Benefits by County

County	No. of Retirees	Annual Gross Benefit	Annual Net Benefit
LOS ALAMOS	1,499	\$80,587,240	\$68,676,876
SANTA FE	796	\$36,368,023	\$31,488,524
RIO ARRIBA	491	\$14,259,001	\$12,860,529
BERNALILLO	336	\$11,244,348	\$9,865,470
SANDOVAL	228	\$8,057,999	\$7,242,402
DOÑA ANA	35	\$1,136,229	\$1,020,413
VALENCIA	37	\$1,095,945	\$967,754
TAOS	28	\$925,189	\$848,249
OTERO	15	\$423,449	\$376,892
EDDY	7	\$225,936	\$201,124
CATRON	4	\$204,895	\$184,751
CHAVES	8	\$195,550	\$182,354
TORRANCE	6	\$193,094	\$172,265
SAN MIGUEL	8	\$173,658	\$157,290
COLFAX	6	\$150,564	\$142,597
SIERRA	5	\$142,200	\$127,311
GRANT	5	\$126,987	\$115,538
SAN JUAN	5	\$103,828	\$99,739
LINCOLN	3	\$106,856	\$91,639
ROOSEVELT	3	\$57,032	\$54,357
LUNA	2	\$49,862	\$45,048
CIBOLA	2	\$47,736	\$39,336
QUAY	2	\$25,286	\$23,948
CURRY	2	\$26,047	\$21,967
SOCORRO	1	\$10,018	\$9,016
Total	3,534	\$155,936,972	\$135,015,388

Source: LANL

Appendix D

Federal and State Government Personal Income Tax Schedule

Appendix D.1 Federal Government Personal Income Tax Schedule

Taxable Income Category	Tax Rate
\$0 - \$16,700	10%
\$16,700 - \$67,900	\$1670 + 15%
\$67,900 - \$137,050	\$9350 + 25%
\$137,050 - \$208,850	\$26,637 + 28%
\$208,850 - \$372,950	\$46,741 + 33%
\$372,950 or more	\$100,894 + 35%

Source: 2009 Tax Rate Schedule, IRS

Appendix D.2 NM State Government Personal Income Tax Schedule

Taxable Income Category	Tax Rate
Less than \$16,000	-1.90%
\$16,000 - \$29,000	-0.10%
\$29,000 - \$45,000	1.30%
\$45,000 - \$77,000	2.30%
\$77,000-\$148,000	2.80%
\$148,000 - \$395,000	3.00%
\$395,000 or more	2.50%

Source: Institute on Taxation and Economic Policy

<http://www.itepnet.org/whopays3.pdf>

Appendix E

Appendix E.1 Largest Employers in New Mexico

Employer	Employment	Source
Kirtland Air Force Base	23,000	Kirtland Air Force Base Website http://www.kirtland.af.mil/units/index.asp
University of New Mexico (including health sciences)	21,841	UNM Factbook 2009 http://www.unm.edu/~oir/factbook/2009fb.pdf
State of New Mexico	19,609	New Mexico State Personnel Office http://www.spo.state.nm.us/NMState_Documents/Employees_docs/2009_annual_web.pdf
Albuquerque Public School	17,101	Albuquerque Public Schools
Walmart	15,991	Dun and Bradstreet, 2007
Los Alamos National Laboratory	11,685	Los Alamos National Laboratory
New Mexico State University ¹	9,650	Fact sheet, New Mexico State University
Presbyterian Healthcare and Hospital	9,000	Human Resource Department, Presbyterian Healthcare and Hospital
Sandia National Laboratories	8,158	Sandia National Laboratories https://share.sandia.gov/news/resources/news_releases/sandia-to-host-first-ever-economic-impact-summit-jan-22/
City of Albuquerque	6,680	Albuquerque Economic Development http://www.abq.org/regional/employers.html

¹ Including faculty, staff and graduate students

Definitions

- Impact Analysis: estimate of the impact of dollars from outside the region on the region's economy
- Output: the total economic activity resulting from LANL operation and construction activities on a region. It is a measure of the region's domestic product created as a result of LANL activities.
- Employment: the estimated number of jobs created as a result of LANL activities
- Direct Impacts: the initial, immediate economic impacts generated by LANL initial expenditures
- Indirect Impacts: the secondary impact caused by changing input needs of directly affected industries (e.g., additional input purchases to produce additional output)
- Induced Impacts: the economic impact resulting from LANL's employees spending a portion of their salary on goods and services for personal consumption
- Employee compensation: wage and salary payments as well as benefits, including health and life insurance, pension payments and other non-cash compensation
- Final Demand: the sales of economic goods and services to purchasers who are the ultimate users or consumers of these products. The examples of ultimate users are household, government, export, etc.
- Value Added: includes employee compensation (wage and salary plus benefits), proprietor income (payment received by self-employed individuals), other property type income (such as interest, rent, royalties, and dividends) and indirect business taxes (excise and sales taxes paid by individuals to businesses)