

DOE/AL/64506--962

**The Economic Impact of
Sandia National Laboratories
on Central New Mexico and the
State of New Mexico Fiscal Year 1995**

by

**Robert R. Lansford, Professor
Department of Agricultural Economics and Agricultural Business
New Mexico Agricultural Experiment Station
New Mexico State University
Las Cruces, New Mexico**

and

**Larry D. Adcock, Economist
Lucille M. Gentry, Program Analyst
Institutional Management Team
Science and Technology Transfer Division
Office of Energy, Science and Technology
Albuquerque Operations Office
U.S. Department of Energy
Albuquerque, New Mexico**

and

**Shaul Ben-David
Professor, Emeritus
Department of Economics
University of New Mexico
Albuquerque, New Mexico**

August 1996

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

HH

MASTER

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

PREFACE

The Albuquerque Operations Office (AL) of the U.S. Department of Energy (DOE) is charged with managing laboratories, production plants, and energy programs in several locations throughout the United States, including New Mexico. Because of the significance of DOE activities in New Mexico, selected economic impact studies have been completed annually since the early 1980s. The types of activities that DOE/AL oversees are, for the most part, an outgrowth of atomic research that started in New Mexico in the 1940s. In New Mexico, activity that was once confined to "the Hill" (Los Alamos National Laboratory), northwest of Santa Fe, has become two national laboratories, a biomedical and environmental research institute; a national waste repository, a national remedial action project, and several energy research and conservation programs.

The economic impact on New Mexico has grown over the years to a point where these activities provide tens of thousands of jobs and contribute billions of dollars to the state's economy. Therefore, it is appropriate that a report be provided periodically to the citizens of New Mexico describing the impact of DOE on the state. This report details activities for federal Fiscal Year 1995.

ACKNOWLEDGMENTS

As is the case with studies of this type, many more people contribute to the effort than just the listed authors. The detailed information needed for the economic modeling and expenditure analysis could not have been obtained without the support of several individuals. Moreover, there are some who contribute but their contributions are not always acknowledged—to those individuals, we apologize.

The employment data by economic sector used in the regional model was obtained from the New Mexico Department of Labor (NMSOL). Larry Blackwell, Chief, Economic Research and Analysis Bureau, NMDOL, made certain we obtained the detailed, but unpublished, data needed for our research. Steve Pazand, Unit Supervisor, Actuarial Research, NMDOL also assisted the study team in obtaining the appropriate data. Importantly, this state government department has cooperated fully with our research efforts for several years and should be commended for their continuing efforts to participate in regional economic studies.

Janet M. Smith, Staff Accountant, Albuquerque Financial Service Center, Department of Energy (DOE) Albuquerque Operations Office, contacted all the DOE agencies to obtain expenditure information for this study. We thank the SNL budget officials who provided budget and expenditure data in a timely fashion, specifically Ralph Bonner, Rosemary Dunivan, Gary Concannon, Carol Spencer, and Pam Ramsey. Also, we thank Bruce Dale, Executive Policy Support, SNL, who provided summarized achievements information.

Tommy Nielsen, Reports Layout Typist, Department of Agricultural Economics and Agricultural Business, New Mexico State University, typed several drafts, the final report, and assured that study information was transmitted among the authors

TABLE OF CONTENTS

INTRODUCTION	1
PROFILE OF SANDIA NATIONAL LABORATORIES	1
History	1
Background	1
Mission and Capabilities	3
Achievements	3
Future Prospects	3
ECONOMIC IMPACTS OF SNL ON CENTRAL NEW MEXICO, FY 1995	3
Funding	3
SNL Expenditure Patterns	3
Measuring the SNL Economic Impact on Central New Mexico	5
Economic Impact of SNL	5
Overall Impact	5
Impact on Income	6
Impact on Employment	7
CONCLUSIONS	7
ECONOMIC IMPACTS OF SNL ON THE STATE OF NEW MEXICO, FY 1995	8
Funding	8
SNL Expenditure Patterns	8
Measuring Sandia National Laboratories Economic Impact on New Mexico	9
Economic Impact of SNL	10
Overall Impact	11
Impact on Income	11
Impact on Employment	12
CONCLUSIONS	12
REFERENCES	13
APPENDIX	15

LIST OF TABLES

Table 1.	Sandia National Laboratories Expenditures (in dollars) in Central New Mexico by Sector and Total Operating Budget, FY 1995.	4
Table 2.	Sandia National Laboratories Expenditures in Central New Mexico by Major Sector, FY 1995.	4
Table 3.	Sandia National Laboratories Regional Influence on Central New Mexico's Economy, FY 1995.	7
Table 4.	Sandia National Laboratories Expenditures (in dollars) in New Mexico by Sector and Total Operating Budget, FY 1995.	8
Table 5.	Sandia National Laboratories Expenditures in New Mexico by Major Sector, FY 1995.	9
Table 6.	Sandia National Laboratories Influence on New Mexico's Economy, FY 1995.	11
Table 7.	Sandia National Laboratories Central New Mexico I/O Model Direct Coefficients, FY 1995.	16
Table 8.	Sandia National Laboratories State-wide I/O Model Direct Coefficients, FY 1995.	17
Table 9.	Sandia National Laboratories, Central New Mexico, FY 1995, Indirect Volume Employment Impacts by Subsector.	18
Table 10.	Sandia National Laboratories, State of New Mexico, FY 1995, Indirect Volume Employment Impacts by Subsector.	19

LIST OF FIGURES

Figure 1.	Sandia National Laboratories Four-County Central New Mexico Region. . . .	2
Figure 2.	Location of Sandia National Laboratories Facilities.	2
Figure 3.	Sandia National Laboratories Expenditures in Central New Mexico by Major Sector, FY 1995	5
Figure 4.	Sandia National Laboratories Economic Impact on Central New Mexico, FY 1995.	6
Figure 5.	Sandia National Laboratories Expenditures in New Mexico by Major Sector, FY 1995	9
Figure 6.	Sandia National Laboratories Economic Impact on the State of New Mexico, FY 1995.	10

INTRODUCTION

Sandia National Laboratories was established in 1949 to perform the engineering development and ordnance responsibilities associated with nuclear weapons. By the early 1960's the facility had evolved into an engineering research and development laboratory and became a multiprogram laboratory during the 1970s. Sandia is operated for the U.S. Department of Energy by the Sandia Corporation, a wholly-owned subsidiary of Lockheed Martin, Incorporated.

For several years, the U.S. Department of Energy (DOE) Albuquerque Operations Office (AL) and New Mexico State University (NMSU) have maintained an inter-industry, input-output model with capabilities to assess the impacts of developments initiated outside the economy such as federal DOE monies that flow into the state, on an economy. This model will be used to assess economic, personal income and employment impacts of SNL on central New Mexico and the state of New Mexico.

The results of the econometric input-output (I/O) model for FY 1995 are not directly comparable to results of the DOE/NMSU I/O model for SNL prior to FY 1995 as a new I/O model was developed to estimate economic impacts for FY 1995. The current model is based on new technical information released by the Bureau of Economic Analysis (BEA), U.S. Department of Commerce. The base year for the FY 1995 I/O model is 1987. Economic sectors were restructured for FY 1995. The base year for the FY 1992 I/O model was 1982 for measuring the SNL economic impacts (Lansford et. al., 1993).

Further revised details about the input-output model can be found in "The Economic Impact of the Department of Energy on the State of New Mexico - FY 1995" report by Lansford, et al. (1995).

For this report, the reference period is FY 1995 (October 1, 1994, through September 30, 1995) includes two major impact analyses: the impact of SNL activities on central New Mexico and the economic impacts of SNL on the state of New Mexico. For purposes of this report, the central New Mexico region includes Bernalillo, Sandoval, Valencia, and Torrance counties (Figure 1). Total

impact represents both direct and indirect responding by business, including induced effects (responding by households). The standard multipliers used in determining impacts result from the inter-industry, input-output models developed for the four-county region and the state of New Mexico.

PROFILE OF SANDIA NATIONAL LABORATORIES

History

Sandia was established in 1949 to perform the engineering development and ordnance responsibilities associated with nuclear weapons. The facility evolved into an engineering research and development laboratory by the early 1960s. During the 1970s, it became a multiprogram national laboratory with responsibilities in national security, energy, and environmental research and development. Sandia National Laboratories is operated for the U.S. Department of Energy by Sandia Corporation, a Lockheed Martin company.

Background

Sandia's executive management offices and larger laboratory complex are located on Kirtland Air Force Base at the southeastern edge of Albuquerque, New Mexico. This site, referred to as Sandia/New Mexico, is composed of five technical areas and an expansive outdoor testing field covering 17,750 acres. This location benefits from its proximity to other major defense laboratories and testing facilities and the emerging high-technology industrial climate in the Rio Grande research corridor. Another Sandia complex in Livermore, California occupies 413 acres at the eastern edge of the San Francisco Bay area. Sandia also operates test facilities in Nevada and Hawaii. Approximately 8,000 people are employed by Sandia, and annual operating funding is over \$1.4 billion in New Mexico.

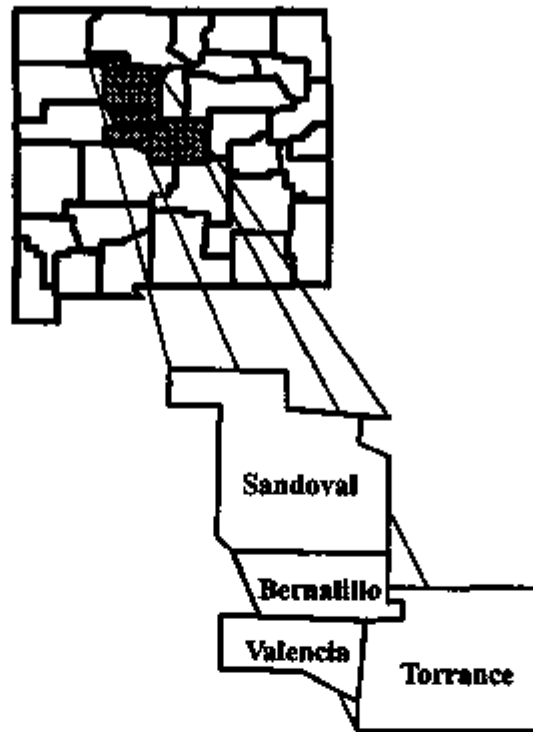


Figure 1. Sandia National Laboratories Four-County Central New Mexico Region.



Figure 2. Location of Sandia National Laboratories Facilities.

Mission and Capabilities

Sandia is responsible for the engineering development of all U.S. nuclear weapons and for systems integration of the nuclear weapons with their delivery vehicles. National security programs and defense-related environmental programs for the Department of Energy constitute 65 percent of the laboratory's work. Responsibilities embrace the design, certification, and assessment of the non-nuclear subsystems of nuclear weapons; safety, security, reliability, and use-control; issues associated with the production and dismantlement of nuclear weapons; surveillance and support of weapons in stockpile; and substantial work in nuclear intelligence, nonproliferation, and treaty verification technologies. Ten percent of Sandia's work supports DOE missions in energy science, research, and development. When appropriate, the laboratory also performs work for other government agencies, particularly the Department of Defense, in programs where unique competencies built from mission responsibilities can add value.

Achievements

- Automated gas generator disassembly robotic workcell.
- MC4033 common radar fuze.
- Certification of the B-2A stealth bomber to carry the B61-7 and B83-01 nuclear bombs.
- Stockpile surveillance on hundreds of nuclear weapons.
- Initial production of molybdenum-99 for domestic medical requirements.
- Vertical-cavity surface-emitting laser with greater than 50 percent energy conversion efficiency.
- Monolithic fabrication process for micromachines.
- World computational speed record.

Future Prospects

Funding for defense programs is expected to stabilize or perhaps increase slightly as the laboratories move toward science-based stockpile stewardship in the absence of nuclear testing. The technology transfer program has experienced

recent reductions, and may experience further changes before stabilizing. Energy programs may experience some decline and change in emphasis in the coming years. Environmental cleanup activities will continue until 2000 with little change. However, in the future, Sandia will be increasingly focused on defense programs responsibilities and activities that support the core competencies for that mission.

ECONOMIC IMPACTS OF SNL ON CENTRAL NEW MEXICO, FY 1995

Funding

Throughout this chapter, funding to or expenditures by major on-site contractors or SNL will be referred to as "activities by SNL" for simplicity. The total SNL funding (operating and capital budget) in central New Mexico in FY 1995 was nearly \$1.5 billion (Table 1). This funding went for salaries and wages, trade and services, capital equipment, and construction.

SNL Expenditure Patterns

Total SNL regional expenditures (the initial respending of the total operating and capital budget) amounted to \$856.9 million or about 59 percent of the total budget in FY 1995 (Table 1). The large out-of-region spending by SNL is due primarily because of a significant effort at Livermore, California and at WIPP in southeastern New Mexico. The eight economic sectors accounting for the majority of SNL regional expenditures for FY 1995 were households (\$494 million), consulting services (\$60 million), other business services (\$52 million), construction (\$42 million), retail trade (\$35 million), engineering, architecture and surveying services (\$33 million), management and data processing and computer services (\$25 million). These seven sectors combined accounted for about 86 percent of total SNL regional expenditures.

SNL expenditures by major sectors in central New Mexico for FY 1995 were personnel, including benefits (\$494 million); services (\$193 million); trade (\$60 million); construction (\$42 million); other sectors (\$30 million); manufacturing (\$21

Table 1. Sandia National Laboratories Expenditures (in dollars) in Central New Mexico by Sector and Total Operating Budget, FY 1995.

Sector	Total Expenditures
1. Livestock & Livestock Products	
2. Other Agricultural Products	
3. Forestry & Fishery Products	
4. Agric., Forestry & Fishery Services	388,415
5. Mining, Crude Petroleum & Natural Gas	246,562
6. Construction	42,210,269
7. Ordnance & Chemical Manufacturing	
8. Food & Kindred Products	
9. Textiles Products & Apparel	8,593
10. Lumber & Wood Products	27,467
11. Paper & Publishing	879,842
12. Petroleum, Refining & Products	286,201
13. Glass, Stone & Clay Products	11,765
14. Primary & Fabricated Metals	5,154,201
15. Computer, Office & Service Equipment Man.	9,691,875
16. Electrical Equipment Man.	3,441,132
17. Scientific Instruments Man.	943,949
18. All Other Man.	191,536
19. Motor Freight Transportation & Warehousing	149,329
20. All Other Transportation	3,247,485
21. Communication	10,039,995
22. Electric & Gas Utilities	15,276,858
23. Water & Other Utilities	767,726
24. Wholesale Trade	24,448,522
25. Retail Trade	35,303,776
26. Finance, Insurance & Real Estate	43,813
27. Hotel, Restaurant & Other Personal Services	45,552
28. Data Processing & Computer Services	26,452,118
29. Management & Consulting Services	60,461,139
30. Engineering, Architecture & Surveying Services	33,570,768
31. Other Business Services	52,613,221
32. Automobile & Other Repair Services	816,075
33. Amusement, Recreation & Video Services	77,590
34. Health, Education & Social Services	19,932,926
35. Government Services	2,152,404
36. Local Government	15,184,398
37. State Government	
38. Sandia National Laboratories (a)	
39. Households	<u>493,866,403</u>
Total Central New Mexico Expenditures	<u>856,929,826</u>
Total Operating and Capital Budget	<u>1,459,382,626</u>

a. Any transfer of money for services or products between specified activities is counted only in the activity of the last receiving agency.

Table 2. Sandia National Laboratories Expenditures in Central New Mexico by Major Sector, FY 1995.

Sectors	FY-1995 thousands of dollars	(%)
I. Personnel		
Salaries & Wages	364,426	44.9%
Benefits	109,441	12.8%
Total	493,866	57.6%
II. Construction	42,210	4.9%
III. Manufacturing	20,838	2.4%
IV. Trade	59,750	7.0%
V. Service	192,989	22.5%
VI. Government		
A. Local Government	15,184	1.8%
B. State Government	0	0.0%
C. Government Services	2,152	0.3%
Total	17,337	2.0%
VII. Other Sectors		
A. Agriculture	388	0.0%
B. Mining	246	0.0%
C. Transportation, Communications and Utilities	29,461	3.4%
D. Finance, Insurance and Real Estate	44	0.0%
Total	<u>30,159</u>	<u>3.5%</u>
TOTAL EXPENDITURES	<u>856,930</u>	<u>100.0%</u>

*Totals may not add due to rounding.

million); government (\$17 million); (Table 2). By far the largest SNL expenditure in central New Mexico was labor, almost 58 percent of the total regional expenditures. In FY 1995, 23 percent of the SNL expenditures went for services, 5 percent for construction, 7 percent for trade, 2 percent for government, 2 percent for manufacturing, and almost 4 percent for other sectors (Figure 3). The Sandia Corporation, managers of SNL, had approximately 8,118 employees in central New Mexico in FY 1995.

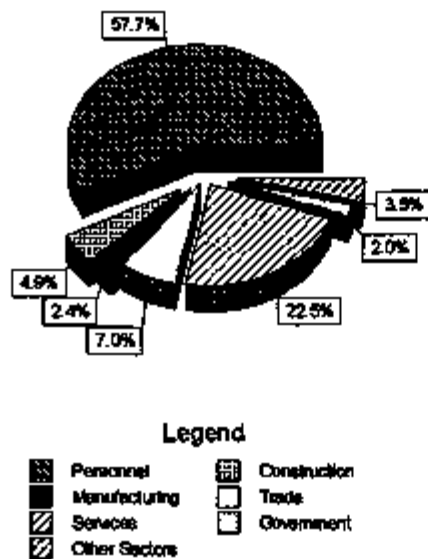


Figure 3. SNL Expenditures in Central New Mexico by Major Sector, FY 1995.

Measuring the SNL Economic Impact on Central New Mexico

The analysis of the SNL economic impact on central New Mexico employed an economic model that incorporates buying and selling linkages among regional industries. This analysis measures the impact generated by SNL expending money in the four central counties (Bernalillo, Sandoval, Torrance, and Valencia) of New Mexico.

Several useful products of the I/O modeling technique are multipliers. Three multipliers, the first related to general economic activity, the second to income, and the third to employment, provide information needed to estimate SNL's impact. The activity multiplier identifies the extent to which an activity, such as SNL, relies directly and indirectly on the regional economy to provide the materials, services, and labor it requires to conduct its activities. It also identifies the extent to which responding by businesses and industries occurs in the region. Income and employment multipliers make possible the identification of not only the direct impacts of an activity on income and jobs but also the indirect (business) and induced (household) effects.

Economic Impact of SNL

The flow diagram (Figure 4) charts the movement of monies spent by SNL. Expenditures for salaries and purchases go to households, regional businesses, and other regions (outside the state of New Mexico). This injection of money affects economic activity directly: the effect equals the amount funded for SNL efforts in central New Mexico (\$1.5 billion).

Households and businesses affected by SNL respond much of the money they receive in the central four-county region, thus creating indirect and induced effects. In turn, businesses buy from other local firms and pay salaries to their employees, starting another round of spending. Every movement of money around the circle causes additional indirect (and induced) effects. However, some funds leak outside the region when purchases are made elsewhere and are not available for further local spending. Thus, indirect effects become smaller and smaller as continued respending occurs.

The initial spending by SNL generates substantial first-round impacts on households (net) and businesses (\$455 and \$346 million, respectively for FY 1995) in the four-county central New Mexico region (Figure 4). The initial spending will give government \$17 million in new revenues (mainly state and local government taxes and fees). However, a large portion of the initial spending (\$602 million plus \$39 million in transfer payments and some fringe benefit costs) flows out of the region through leakages.

Responding by regional businesses and purchases by households and state and local government eventually bring the total impact on private business to about \$1.6 billion. Also, responding activity will continue to add to personal income and government revenues so that total personal income will increase to \$1.1 billion, and state and local government tax revenues and government fees will expand to \$177 million as a result of direct, indirect, and induced effects.

Overall Impact

Using SNL's funding for its total operating and capital budget of \$1.5 billion, econometric modeling techniques were used to calculate the

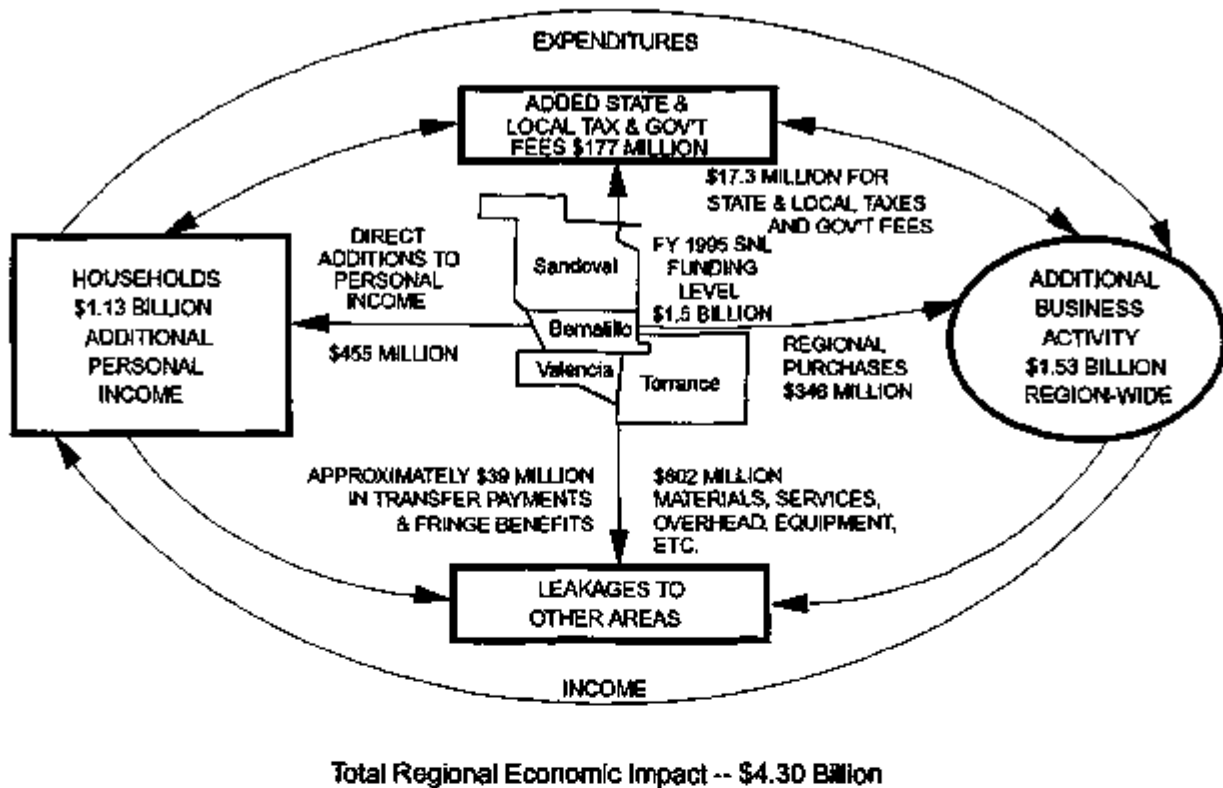


Figure 4. Sandia National Laboratories Economic Impact on Central New Mexico, FY 1995.

effects of this funding. Table 3 gives the direct, indirect, induced, and total economic activity impact of SNL on the region. As Table 3 indicates, the total increase in economic activity in central New Mexico was \$4.3 billion from this initial infusion of \$1.5 billion. The economic activity multiplier measures the volume of activity generated among various sectors of a region as a result of a \$1 exogenous change in a sector. For example, the regional economic activity multiplier for SNL for FY 1995 was 2.94. This indicates that for every \$1 spent by SNL in central New Mexico, another \$1.94 was generated for a total impact of \$2.94 in FY 1995.

No official figure exists for total economic activity in the four-county central New Mexico region; however, for the purposes of this study total economic activity in the region is estimated at \$41.0 billion for 1995 (Table 3). This total impact of \$4.3 billion generated by SNL is about 10.5 percent of the estimated \$41.0 billion total economic activity in the region.

Table 9 in the Appendix gives SNL's indirect economic impacts on private and public sectors for FY 1995. The retail trade sector received the greatest volume of indirect economic impacts, with about 16 percent of the total estimated private and public indirect impacts. Other sectors with large indirect economic impacts include finance, insurance, and real estate (FIRE) (14 percent), other business services (7 percent), health, education, and social services (6 percent), state government (6 percent) and construction (4 percent).

Impact on Income

Personal income is money that goes to individuals that are for purchases such as groceries, automobiles and gasoline, mortgage payments, medical, new shoes, taxes and savings. Most personal income consists of wages and salaries, although payments received as interest, rent, dividends, and social security benefits (payments to individuals) also count as personal income.

Table 3. Sandia National Laboratories Regional Influence on Central New Mexico's Economy, FY 1995.

Economic Measure	SNL	Total Region	SNL as a % of the Region
	billions of dollars		%
Economic Activity			
Direct Expenditures	1.46		
Indirect and Induced (a)	2.84		
Total Economic Activity	4.30	41.0	10.5
Multiplier	2.94		
Personal Income			
Gross Labor Net Wages and Salaries	0.49		
Indirect and Induced (a)	0.67		
Total Personal Income	1.13	13.0	8.6
Multiplier	2.48		
---number of employees---			
Employment			
Direct	8,118		
Indirect and Induced	23,525		
Total Employment	31,643	326,162	9.7
Multiplier	3.90		

- (a) Based on the results of the econometric model.
 (b) New Mexico Department of Labor, Economic Research and Analysis Bureau, Table C, 1995.

Some of the fringe benefits and wages paid to employees are not counted in the current income stream (i.e., social security payments by employers and employees). In FY 1995, labor payments of \$494 million resulted in an estimated \$455 million in net additional personal income to the central New Mexico region.

Income multipliers measure the indirect and induced effects from new income generated from payment to labor by SNL. The income multiplier was 2.48 for FY 1995 (Table 3). Applying the income multiplier of 2.48 to the direct net personal income figure of \$455 million yields a total impact of \$1.1 billion for income in the region resulting from SNL activity. This multiplier indicates that for every \$1 of personal income from SNL for labor, another \$1.48 is generated through indirect and induced effects, for a total impact on personal income of \$2.48.

In FY 1995, total personal income in central New Mexico was estimated at \$13 billion (Table 3). SNL activities in the central New Mexico region accounted for almost 9 percent of total regional personal income in 1995.

Impact on Employment

Beside this dollars-and-cents impact, SNL affects regional employment. In addition to the average of 8,118 mainly full-time jobs created by SNL in FY 1995, other jobs are supported by the resulting needs for goods and services and responding by individuals and businesses. Firms filling those needs have their own employees and in turn, spend money with other firms who must also hire people. In addition, each individual employee needs goods and services and helps support other jobs such as waitresses, mechanics, clerks, lawyers, and nurses.

The employment multipliers measure the average number of indirect and induced jobs supported, by SNL. The regional employment multiplier for SNL was estimated to be 3.90 in FY 1995 (Table 3). This indicates that for every 100 jobs created by SNL, another 290 jobs were supported in FY 1995, translating to a total impact of 31,643 jobs. These 31,643 jobs created or supported by SNL accounted for about 10 percent of total employment in the region in FY 1995.

Table 9 in the Appendix gives the SNL indirect employment impact on private and public sectors for FY 1995. The more labor-intensive sectors received the greater indirect employment impact. The retail trade sector had the largest indirect impact of about 25 percent of total private and public indirect impact. Other sectors with a large indirect employment impact include hotel, restaurant, and other personal services (10 percent), FIRE (10 percent), health, education and social services (8 percent), other business services (6 percent) and state government (6 percent).

CONCLUSIONS

In summary, SNL operations in central New Mexico have a significant and positive influence on the economy of central New Mexico. The funding for SNL in central New Mexico was

about \$1.5 billion in FY 1995, yielding a total economic impact of \$4.3 billion or about 10.5 percent of the total economic activity in the region.

Total personal income impact was over \$1.1 billion in FY 1995 or nearly 9 percent of personal income derived in the four counties. The employment multiplier, 3.90 for the region, means that the 8,118 average employment level in FY 1995 resulted in a total impact of 31,643. In effect, nearly one of every 10 jobs in the region was created or supported by SNL. Approximately 75 percent of the jobs created indirectly by SNL in the region occurred in the retail trade, FIRE, and services sectors.

ECONOMIC IMPACTS OF SNL ON THE STATE OF NEW MEXICO, FY 1995

Funding

Throughout this chapter, funding to or expenditures by major on-site contractors or SNL offices will be referred to as "activities by SNL" for simplicity. The state-wide total funding (operating and capital budget) for SNL for FY 1995 was nearly \$1.5 billion (Table 4).

SNL Expenditure Patterns

Total SNL in-state expenditures (the initial respending of the total operating and capital budget) amounted to about 62 percent of the total budget in FY 1995 (Table 4). SNL total in-state expenditures in New Mexico were \$900 million, primarily for salaries and wages, trade and services, capital equipment, and construction (Table 4).

Out-of-state purchases and salaries for those living elsewhere amounted to \$559 million. In addition, approximately \$39 million for transfer payments and some fringe benefit costs for in-state labor costs leaked directly out of state. The eight economic sectors accounting for the majority of SNL in-state expenditures for FY 1995 were households (\$496 million), consulting services (\$61 million), other business services (\$54 million), construction (\$42 million), retail trade (\$39 million), engineering, architecture, and

Table 4. Sandia National Laboratories Expenditures (in dollars) in New Mexico by Sector and Total Operating Budget, FY 1995.

Sector	Total Expenditures
1. Livestock & Livestock Products	5000
2. Other Agricultural Products	
3. Forestry & Fishery Products	
4. Agric., Forestry & Fishery Services	388,415
5. Mining, Crude Petroleum & Natural Gas	264,480
6. Construction	42,385,740
7. Ordnance & Chemical Manufacturing	
8. Food & Kindred Products	
9. Textiles Products & Apparel	11,535
10. Lumber & Wood Products	29,941
11. Paper & Publishing	692,945
12. Petroleum, Refining & Products	286,201
13. Glass, Stone & Clay Products	11,765
14. Primary & Fabricated Metals	5,257,701
15. Computer, Office & Service Equipment Man.	9,691,875
16. Electrical Equipment Man.	3,830,312
17. Scientific Instruments Man.	944,134
18. All Other Man.	191,536
19. Motor Freight Transportation & Warehousing	216,729
20. All Other Transportation	3,247,485
21. Communication	10,051,141
22. Electric & Gas Utilities	15,344,809
23. Water & Other Utilities	767,726
24. Wholesale Trade	24,632,557
25. Retail Trade	38,899,912
26. Finance, Insurance & Real Estate	100,778
27. Hotel, Restaurant & Other Personal Services	45,552
28. Data Processing & Computer Services	25,831,591
29. Management & Consulting Services	60,807,408
30. Engineering, Architecture & Surveying Services	33,904,999
31. Other Business Services	54,413,586
32. Automobile & Other Repair Services	626,575
33. Amusement, Recreation & Video Services	77,590
34. Health, Education & Social Services	29,569,826
35. Government Services	2,294,454
36. Local Government	15,184,398
37. State Government	23,716,659
38. Sandia National Laboratories (a)	
39. Households	495,985,662
Total Central New Mexico Expenditures	900,120,815
Total Operating and Capital Budget	1,459,382,626

a. Any transfer of money for services or products between specified activities is counted only in the activity of the last receiving agency.

surveying services (\$34 million), data processing and computer services (\$26 million), and wholesale trade (\$25 million). These sectors

Table 5. Sandia National Laboratories Expenditures in New Mexico by Major Sector, FY 1995.

Sectors	FY-1995 thousands of dollars	(%)
I. Personnel		
Salary & Wages	386,073	42.9%
Benefits	<u>109,923</u>	<u>12.2%</u>
Total	495,996	55.1%
II. Construction	42,386	4.7%
III. Manufacturing	21,148	2.3%
IV. Trade	63,432	7.0%
V. Service	205,577	22.8%
VI. Government		
A. Local Government	15,184	1.7%
B. State Government	23,717	2.6%
C. Government Services	<u>2,294</u>	<u>0.3%</u>
Total	41,196	4.6%
VI Other Sectors		
A. Agriculture	393	0.0%
B. Mining	284	0.0%
C. Transportation, Communications and Utilities	29,628	3.3%
D. Finance, Insurance and Real Estate	<u>101</u>	<u>0.0%</u>
Total	<u>30,386</u>	<u>3.4%</u>
TOTAL EXPENDITURES	900,121	100.0%

*Totals may not add due to rounding.

combined accounted for about 80 percent of total in-state SNL expenditures in FY 1995.

SNL expenditures by major sectors in New Mexico for FY 1995 were personnel including benefits (\$496 million), trade and services (\$269 million), construction (\$42 million), government (\$41 million), other sectors (\$30 million), and manufacturing (\$21 million) (Table 5). By far the largest expenditure by SNL in the state of New Mexico was labor (\$496 million), which is about 55 percent of the state-wide expenditures (Table 5). Salaries and wages (without benefit costs) accounted for 43 percent of the total in-state expenditures. In FY 1995, 23 percent of SNL expenditures went for services, 7 percent for trade, 5 percent for construction, 5 percent went to

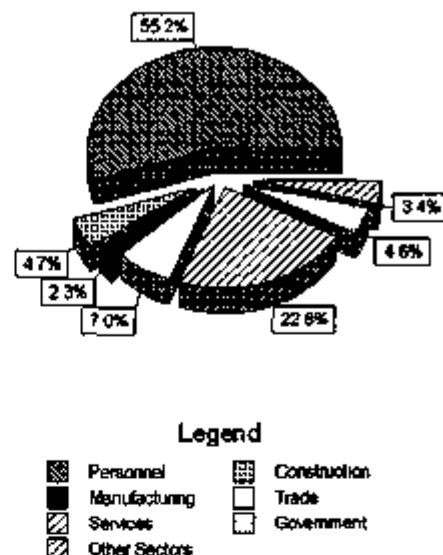


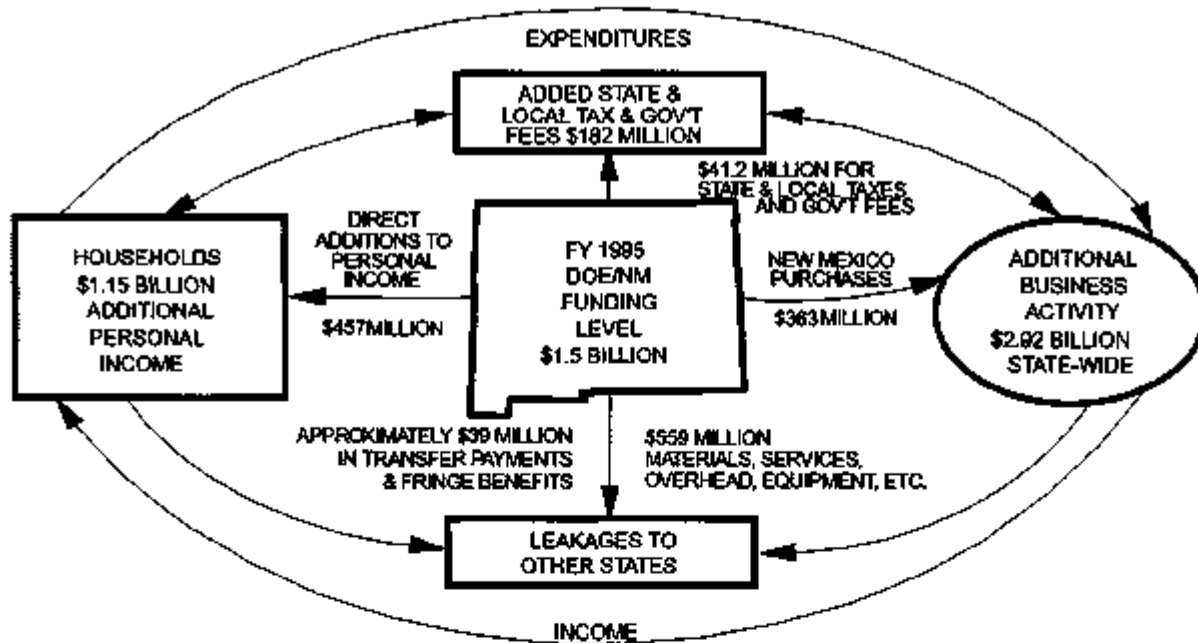
Figure 5. SNL Expenditures in New Mexico by Major Sector, FY 1995.

government, 3 percent other sectors, and 2 percent for manufacturing (Figure 5).

Measuring Sandia National Laboratories Economic Impact on New Mexico

The analysis of SNL economic impact on the state of New Mexico employed an economic model that incorporates buying and selling linkages among regional industries. This analysis measures the impact generated by SNL, the DOE/AL contractor expending money in the state.

Several useful products of the I/O modeling technique are multipliers. Three multipliers, the first related to general economic activity, the second to income, and the third to employment, provide the information needed to estimate SNL's impact. The activity multiplier identifies the extent to which an activity such as SNL relies directly and indirectly on the state economy to provide it with the materials, services, and labor it requires to conduct its activities. It also examines the extent to which responding by businesses and industries occurs in the state. Income and employment multipliers make it possible to identify not only the direct impacts of an activity on income and jobs, but also the indirect (business) and induced (household) effects.



Total State-Wide Economic Impact – \$4.38 Billion

Figure 6. Sandia National Laboratories Economic Impact on the State of New Mexico, FY 1995.

Economic Impact of SNL

The flow diagram (Figure 6) charts the movement of monies spent by SNL in the state of New Mexico. Expenditures for salaries and purchases go to households, state-wide businesses, and other regions (outside the state of New Mexico). This injection of money affects economic activity directly, that is, the effect equals the amount allocated to SNL (\$1.5 million).

Households and businesses affected by SNL spend much of the money they receive in the state, thus creating indirect (business) and induced (household) effects. In turn, businesses buy from other local firms and pay salaries to their employees, starting another round of spending. Every movement of money around the circle causes additional indirect (and induced) effects. However, some funds leak outside the region (state) when purchases are made elsewhere and are not available for further local spending. Thus, the indirect effects become smaller and smaller as continued respending occurs.

Initial spending by SNL generates substantial first-round impacts on households (net) and businesses (\$457 and \$363 million, respectively for FY 1995) in New Mexico (Figure 6). This initial spending will give government \$41.2 million in new revenues (mainly state and local government taxes and fees); however, a large portion of the initial spending (\$559 million, plus \$39 million in transfer payments and some fringe benefit costs) flows out of state through leakages.

Respending by in-state businesses and purchases by households and state and local governments eventually bring the total impact on private business to about \$2.9 billion. Also, respending activity will continue to add to personal income and government revenues so that the total personal income effect will increase to about \$1.15 billion, and state and local government tax revenues and government fees will expand \$182 million as a result of direct, indirect, and induced impacts.

Table 6. Sandia National Laboratories Influence on New Mexico's Economy, FY 1995.

Economic Measure	SNL	Total State	SNL as
			a % of the State
	billions of dollars		%
Economic Activity			
Direct Expenditures	1.48		
Indirect and Induced (a)	2.91		
Total	4.38	84.6	5.2
Economic Activity Multiplier	3.00		
Personal Income			
Gross Labor	0.48		
Net Wages and Salaries	0.48		
Indirect and Induced (a)	0.69		
Total	1.15	30.4	3.8
Personal Income Multiplier	2.51		
-----number of employees-----			
Employment			
Direct	6,153		
Indirect and Induced	24,196		
Total	32,338	738,440(b)	4.4
Employment Multiplier	3.96		

Numbers may not add due to rounding.

(a) Based on the results of the econometric model.

(b) New Mexico Department of Labor, Economic Research and Analysis Bureau, Table C, 1996.

Overall Impact

No official figure exists for total economic activity in the state; however, for this study, a 1995 estimate of \$84.6 billion is used (Table 6). While SNL is an important economic factor in central New Mexico, the economic impacts are important but less significant when measured on a state-wide basis. SNL directly added nearly \$1.5 billion to the total economy in FY 1995. The estimated indirect (and induced) impact of \$2.9 billion brings the total impact to \$4.4 billion or about 5 percent of the estimated \$84.6 billion state-wide total activity in 1995.

The estimated \$4.4 billion total economic impact in New Mexico from the initial infusion of \$1.5 billion is derived from I/O modeling techniques employed in the study. The modeling process produces estimated impacts from which

multipliers can be determined. The economic activity multipliers are used to measure the volume of activity generated among various sectors as a result of a \$1 exogenous change in a sector.

For example, the economic activity multiplier for SNL for FY 1995 was 3.00. This indicates that for every \$1 spent by SNL or its major on-site contractors in New Mexico, another \$2.00 was generated, for a total impact of \$3.00 in FY 1995.

Appendix Table 10 gives SNL indirect economic impacts on private and public sectors for FY 1995. The retail trade sector received the greatest volume of indirect economic impacts, about 16 percent of the total estimated private and public sector volume of indirect impacts. Other sectors with large indirect impacts were FIRE (14 percent), other business services (6 percent), health, education and social services (6 percent), hotel restaurant and other personal services (5 percent), and water and other utilities (5 percent).

Impact on Income

Personal income is money that goes to individuals to be spent for items such as groceries, automobiles and gasoline, mortgage payments, medical, new shoes, taxes, and savings. Most personal income consists of wages and salaries, although payments received as interest, rent, dividends, and social security benefits (payments to individuals) also count as personal income. Some of the fringe benefits and wages to employees are not counted in the current income stream (i.e., social security payments by employers and employees). In FY 1995, labor payments of \$496 million resulted in an estimated \$457 million in net additional personal income to the state.

Income multipliers measure the indirect and induced effects of new income generated from payment to labor by SNL. The state income multiplier was 2.51 for FY 1995 (Table 6). Application of the income multiplier of 2.51 to the direct net personal income figure of \$457 million yields a total impact of \$1.15 billion for income in the state resulting from SNL activity. This multiplier indicates that for every \$1 of personal income from SNL for labor, another \$1.51 is generated through indirect and induced

effects, for a total impact on personal income of \$2.51.

In FY 1995, total personal income in New Mexico was estimated at \$30.4 million (Table 6). SNL activities in the New Mexico accounted for 3.8 percent of total personal income in 1995.

Impact on Employment

Beside this dollars-and-cents impact, SNL affects state-wide employment. In addition to the average of 8,153 mainly full-time jobs created by SNL in FY 1995, other jobs are supported by needs for goods and services and responding by individuals and businesses. Firms filling those needs have their own employees and, in turn, spend money with other firms who must also hire people. In addition, each individual employee needs goods and services and helps support other jobs such as waitresses, mechanics, clerks, lawyers, and nurses.

Employment multipliers measure the number of indirect and induced jobs supported, on the average, by SNL. The state-wide employment multiplier for SNL was estimated to be 3.97 in FY 1995 (Table 8). This indicates that for every 100 jobs created by SNL, another 297 jobs were supported in FY 1995, for a total impact of 397 jobs. The total impact of 32,339 jobs created or supported by SNL accounted for over 4 percent of total employment in the state in FY 1995 (see Table 6).

Table 10 in the Appendix gives SNL indirect employment impact on the private and public sectors for FY 1994. The more labor-intensive sectors received the greater indirect employment impact. The retail trade sector had the largest indirect impact, about 25 percent of the private and public indirect impact. Other sectors with a large indirect employment impact include hotel, restaurant and other services (9 percent), FIRE (9 percent), health, education and social services (9 percent), and other business services (5 percent).

CONCLUSIONS

In summary, SNL operations in New Mexico have a significant and positive influence on the economy of New Mexico. The funding for SNL in

New Mexico, nearly \$1.5 billion in FY 1995 supported a total economic impact of \$4.4 billion or about 5 percent of total economic activity in the state.

Total personal income impacts were nearly \$1.15 billion in FY 1995 or nearly 4 percent of personal income derived in the state. The employment multiplier was 3.97 for the state, meaning that the 8,153 average employment level in FY 1995 supported a total impact of 32,339. In effect, one of every 23 jobs in the state was created or supported by SNL. Approximately 75 percent of the jobs created indirectly by SNL in the state occurred in the trade, services, and FIRE sectors (Table 9).

REFERENCES

- Adcock, Larry. "Effective Tax Rates for New Mexico, 1986." Los Alamos National Laboratory. Unpublished manuscript, Los Alamos, New Mexico.
- Adcock, L.D., T.M. Cohen, R.R. Lansford, D.J. Post, and S.L. Runyon, 1992. "The Social and Economic Impacts of the Department of Energy on the State of New Mexico, FY 1991." U.S. DOE Albuquerque, Albuquerque Operations Office, Albuquerque, NM.
- Adcock, L.D., and R.R. Lansford, 1991. "The Social and Economic Impacts of the Department of Energy on the State of New Mexico, FY 1990." U.S. DOE Albuquerque, Albuquerque Operations Office, Albuquerque, NM.
- Adcock, L.D., and R.R. Lansford, 1990. "The Social and Economic Impacts of the Department of Energy on the State of New Mexico, FY 1989." U.S. DOE Albuquerque, Albuquerque Operations Office, Albuquerque, NM.
- Adcock, L.D., R.R. Lansford, and A. Turpin, 1989. "The Social and Economic Impact of the Department of Energy on the State of New Mexico, FY 1988." U.S. DOE Albuquerque, Albuquerque Operations Office, Report No. APD-89-2, Albuquerque, NM.
- Adcock, Larry and Larry Waldman, "A Non-Survey Technique for Constructing a Direct Requirements Regional Input-Output Table." Proceedings 1975 Conference of the Association for University and Business Research, Virginia, edited at Arizona State University, Tempe, Arizona.
- Carruthers, Garrey, K. Mitchell, and Thomas Williams, 1972. "An Inter-industry Model of the Economy of North-Central New Mexico," Agricultural Experiment Station Research Report 237, New Mexico State University, Las Cruces, New Mexico.
- Cohen, T.M., L.D. Adcock, and R.R. Lansford, 1992. "The Economic Impact of Sandia National Laboratories and Sandia National Laboratories on the State of New Mexico FY 1990." Agricultural Experiment Station, Technical Report 7, New Mexico State University, Las Cruces, NM.
- Lansford, R.R., L.D. Adcock, L.M. Gentry and S. Ben-David, 1995. "The Economic Impact of the Department of Energy on the State of NM, FY 1994." US DOE Albuquerque, Albuquerque Operations Office, Albuquerque, NM.
- Lansford, R.R., L.D. Adcock, and S. Ben-David, 1994. "The Economic Impact of the Department of Energy on the State of NM, FY 1993." US DOE Albuquerque, Albuquerque Operations Office, Albuquerque, NM.
- Lansford, R.R., L.D. Adcock, L.M. Gentry and S. Ben-David, 1995. "The Economic Impact of Sandia Laboratories on Central New Mexico and the State of New Mexico, FY 1994." U.S. DOE Albuquerque, Albuquerque Operations Office, Albuquerque, NM.
- Lansford R.R., Adcock, L.D., and S.L. Runyon, 1993. "The Economic Impact of Sandia Laboratories on Central New Mexico and the State of New Mexico, FY 1992." U.S. DOE Albuquerque, Albuquerque Operations Office, Albuquerque, NM.
- Lansford, R.R., L.D. Adcock, S. Ben-David, and S.L. Runyon, 1993. "The Economic Impact of the Department of Energy on the State of New Mexico FY 1992." U.S. DOE Albuquerque, Albuquerque Operations Office, Albuquerque, NM.
- Lansford, R.R., J.A. Diemer, E.M. Jaramillo, A. Turpin, D. Williams, V. Devers, and L. Adcock, 1988. "The Social and Economic Impact of the Department of Energy on the State of New Mexico, FY 1987," Special Report 79, Agricultural Experiment Station, New Mexico State University, Las Cruces, New Mexico.

- New Mexico Department of Labor, April 1989. "New Mexico Labor Market, Annual Planning Report," Bureau of Economic Research and Analysis, University of New Mexico, Albuquerque, New Mexico.
- New Mexico Department of Labor, January 1991. "Covered Employment and Wages," Quarterly Report, Quarter 1989 and First Quarter 1990; Economic Research and Analysis Bureau, Albuquerque, New Mexico.
- New Mexico Department of Labor, April 1995. "Table A," Economic Research and Analysis Bureau, Albuquerque, New Mexico.
- New Mexico Department of Labor. "Report of Employment, Wages, and Contributions (Es-202)," Economic Research and Analysis Bureau, Albuquerque, New Mexico; unpublished information.
- Runyon, Shannon L, 1993. Effective Tax Rates for New Mexico by Economic Sector, M.S. thesis, New Mexico State University, Las Cruces, May, 1993.
- Sunwest Financial Services, Inc., 1995, "New Mexico Progress, Economic Review of 1991," in draft; Sunwest Financial Services, Inc. P.O. Box 25500, Albuquerque, NM 87125.
- Turpin, Annette, Larry Adcock, and Donna Williams, 1987. "The Economic Impact of the United States Department of Energy on the State of New Mexico Fiscal Years 1985 and 1986," Los Alamos National Laboratory Miscellaneous Report, Los Alamos, New Mexico.
- U.S. Department of Commerce, April 1, 1991. "New Mexico Population by Race and Ethnicity 1990," Bureau of the Census, PL-94-171.
- U.S. Department of Agriculture, 1994, "New Mexico Agricultural Statistics, 1993," New Mexico Agricultural Statistics Service, Las Cruces, New Mexico.
- U.S. Department of Agriculture, 1991, "New Mexico Agricultural Statistics, 1992," New Mexico Agricultural Statistics Service, Las Cruces, New Mexico.
- U.S. Department of Commerce, May 1995, Benchmark Input-Output Accounts for the U.S. Economy, 1987 Survey of Current Business, Washington, D.C.
- U.S. Department of Commerce, 1995. County Business Patterns of 1984, New Mexico," Bureau of the Census, CBP-94-33.
- U.S. Department of Agriculture, 1994. "Agricultural Statistics 1993," U.S. Government Printing Office, Washington D.C.

APPENDIX

Table 7. SNL Central New Mexico I/O Model Direct Coefficients, FY 1995.

Sector	Direct Coefficients
1. Livestock & Livestock Products	0.000000
2. Other Agricultural Products	0.000000
3. Forestry & Fishery Products	0.000000
4. Agric., Forestry & Fishery Services	0.000266
5. Mining, Crude Petroleum & Natural Gas	0.000000
6. Construction	0.028923
7. Ordnance & Chemical Manufacturing	0.000000
8. Food & Kindred Products Manufacturing	0.000000
9. Textiles Products & Apparel Manufacturing	0.000000
10. Lumber & Wood Products Manufacturing	0.000019
11. Paper & Publishing Manufacturing	0.000603
12. Petroleum Refining & Products Manufacturing	0.000196
13. Glass, Stone & Clay Products Manufacturing	0.000008
14. Primary & Fabricated Metals Manufacturing	0.003532
15. Computer, Office & Service Equipment Manufacturing	0.006841
16. Electrical Equipment Manufacturing	0.002358
17. Scientific Instruments Manufacturing	0.000847
18. All Other Manufacturing	0.000131
19. Motor Freight Transportation & Warehousing	0.000102
20. All Other Transportation	0.002225
21. Communication	0.006880
22. Electric & Gas Utilities	0.010488
23. Water & Other Utilities	0.000526
24. Wholesale Trade	0.016751
25. Retail Trade	0.024191
26. Finance, Insurance & Real Estate	0.000030
27. Hotel Restaurant & Other Personal Services	0.000031
28. Data Processing & Computer Services	0.017440
29. Management & Consulting Services	0.041429
30. Engineering, Architecture & Surveying Services	0.029003
31. Other Business Services	0.036052
32. Automobile & Other Repair Services	0.000559
33. Amusement, Recreation & Video Services	0.000053
34. Health, Education & Social Services	0.013658
35. Government Services	0.001475
36. Local Government	0.010405
37. State Government	0.000000
38. Sandia National Laboratories	0.000000
39. Households	0.338408
Total New Mexico Expenditures	0.587012
Total Operating and Capital Budget	1.000000

Table 8. SNL State-wide New Mexico I/O Model Direct Coefficients, FY 1995.

Sector	Direct Coefficients
1. Livestock & Livestock Products	0.000003
2. Other Agricultural Products	0.000000
3. Forestry & Fishery Products	0.000000
4. Agric., Forestry & Fishery Services	0.000266
5. Mining, Crude Petroleum & Natural Gas	0.000181
6. Construction	0.029044
7. Ordnance & Chemical Manufacturing	0.000000
8. Food & Kindred Products Manufacturing	0.000000
9. Textiles Products & Apparel Manufacturing	0.000008
10. Lumber & Wood Products Manufacturing	0.000021
11. Paper & Publishing Manufacturing	0.000612
12. Petroleum Refining & Products Manufacturing	0.000196
13. Glass, Stone & Clay Products Manufacturing	0.000008
14. Primary & Fabricated Metals Manufacturing	0.003603
15. Computer, Office & Service Equipment Manufacturing	0.006641
16. Electrical Equipment Manufacturing	0.002625
17. Scientific Instruments Manufacturing	0.000647
18. All Other Manufacturing	0.000131
19. Motor Freight Transportation & Warehousing	0.000149
20. All Other Transportation	0.002225
21. Communication	0.006887
22. Electric & Gas Utilities	0.010515
23. Water & Other Utilities	0.000526
24. Wholesale Trade	0.016610
25. Retail Trade	0.026655
26. Finance, Insurance & Real Estate	0.000069
27. Hotel Restaurant & Other Personal Services	0.000031
28. Data Processing & Computer Services	0.017769
29. Management & Consulting Services	0.041667
30. Engineering, Architecture & Surveying Services	0.023232
31. Other Business Services	0.037285
32. Automobile & Other Repair Services	0.000566
33. Amusement, Recreation & Video Services	0.000053
34. Health, Education & Social Services	0.020262
35. Government Services	0.001572
36. Local Government	0.010405
37. State Government	0.016261
38. Sandia National Laboratories	0.000000
39. Households	0.338867
Total New Mexico Expenditures	0.616782
Total Operating and Capital Budget	1.000000

Table 9. Sandia National Laboratories, Central New Mexico, FY 1995, Indirect Volume Employment Impacts by Subsector.

Sector	Volume (\$000)	Employment	
		Jobs	%
1. Livestock & Livestock Products	6,760	19.5	0.1
2. Other Agricultural Products	7,932	47.9	0.2
3. Forestry & Fishery Products	439	1.7	0.0
4. Agric., Forestry & Fishery Services	850	28.6	0.1
5. Mining, Crude Petroleum & Natural Gas	2,733	10.9	0.0
6. Construction	68,197	802.4	3.4
7. Ordnance & Chemical Manufacturing	3,038	23.3	0.1
8. Food & Kindred Products	28,947	163.8	0.7
9. Textiles Products & Apparel	5,452	68.0	0.3
10. Lumber & Wood Products	820	9.9	0.0
11. Paper & Publishing	11,216	160.0	0.7
12. Petroleum, Refining & Products	20,270	15.5	0.1
13. Glass, Stone & Clay Products	2,411	28.3	0.1
14. Primary & Fabricated Metals	9,462	67.6	0.4
15. Computer, Office & Service Equipment Man.	21,052	180.0	0.8
16. Electrical Equipment Man.	12,599	107.7	0.5
17. Scientific Instruments Man.	2,322	17.7	0.1
18. All Other Man.	6,445	69.8	0.3
19. Motor Freight Transportation & Warehousing	12,650	158.4	0.7
20. All Other Transportation	24,303	372.2	1.6
21. Communication	48,473	481.7	2.0
22. Electric & Gas Utilities	80,852	162.3	0.7
23. Water & Other Utilities	6,837	90.2	0.4
24. Wholesale Trade	74,546	991.8	4.2
25. Retail Trade	274,569	5,930.6	25.2
26. Finance, Insurance & Real Estate	248,234	2,343.1	10.0
27. Hotel, Restaurant & Other Personal Services	88,320	2,357.8	10.0
28. Data Processing & Computer Services	42,476	524.7	2.2
29. Management & Consulting Services	77,579	707.2	3.0
30. Engineering, Architecture & Surveying Services	35,497	340.0	1.4
31. Other Business Services	119,297	1,330.8	5.7
32. Automobile & Other Repair Services	63,426	673.0	2.9
33. Amusement, Recreation & Video Services	30,027	748.4	3.2
34. Health, Education & Social Services	92,660	1,939.5	8.2
TOTAL Private Sector	1,530,690	20,994.3	89.2
35. Government Services	19,421	268.0	1.1
36. Local Government	57,811	861.5	3.7
37. State Government	99,386	1,401.2	6.0
TOTAL Private Sector	176,617	2,530.7	10.8
TOTAL Private and Public Sectors	1,707,307	23,525.0	100.0

** Detail may not add due to rounding

Table 10. Sandia National Laboratories, State of New Mexico, FY 1995, Indirect Volume Employment Impacts by Subsector.

Sector	Volume (\$000)	Employment	
		Jobs	%
1. Livestock & Livestock Products	7,753	22.3	0.1
2. Other Agricultural Products	8,515	51.4	0.2
3. Forestry & Fishery Products	445	1.8	0.0
4. Agric., Forestry & Fishery Services	2,791	93.8	0.4
5. Mining, Crude Petroleum & Natural Gas	32,234	128.4	0.5
6. Construction	69,484	817.6	3.4
7. Ordnance & Chemical Manufacturing	3,086	23.7	0.1
8. Food & Kindred Products	32,522	184.0	0.8
9. Textiles Products & Apparel	5,559	69.3	0.3
10. Lumber & Wood Products	909	10.9	0.0
11. Paper & Publishing	9,934	141.7	0.6
12. Petroleum, Refining & Products	30,823	23.6	0.1
13. Glass, Stone & Clay Products	2,787	32.7	0.1
14. Primary & Fabricated Metals	10,609	98.2	0.4
15. Computer, Office & Service Equipment Man.	21,207	181.3	0.7
16. Electrical Equipment Man.	12,963	110.9	0.5
17. Scientific Instruments Man.	2,399	18.3	0.1
18. All Other Man.	6,336	68.7	0.3
19. Motor Freight Transportation & Warehousing	12,382	155.2	0.6
20. All Other Transportation	26,062	399.1	1.7
21. Communication	47,677	473.7	2.0
22. Electric & Gas Utilities	83,854	168.3	0.7
23. Water & Other Utilities	8,289	109.3	0.5
24. Wholesale Trade	73,882	983.0	4.1
25. Retail Trade	282,018	6,091.5	25.2
26. Finance, Insurance & Real Estate	241,401	2,278.6	9.4
27. Hotel, Restaurant & Other Personal Services	89,575	2,391.3	9.9
28. Data Processing & Computer Services	40,511	500.5	2.1
29. Management & Consulting Services	78,381	714.5	3.0
30. Engineering, Architecture & Surveying Services	35,881	343.7	1.4
31. Other Business Services	109,162	1,217.8	5.0
32. Automobile & Other Repair Services	64,135	680.5	2.8
33. Amusement, Recreation & Video Services	33,471	834.3	3.4
34. Health, Education & Social Services	<u>103,452</u>	<u>2,165.4</u>	<u>9.0</u>
TOTAL Private Sector	1,590,501	21,585.2	89.2
35. Government Services	19,843	273.8	1.1
36. Local Government	58,881	877.5	3.6
37. State Government	<u>102,807</u>	<u>1,449.4</u>	<u>6.0</u>
TOTAL Private Sector	<u>181,530</u>	<u>2,600.7</u>	<u>10.8</u>
TOTAL Private and Public Sectors	<u>1,772,031</u>	<u>24,185.9</u>	<u>100.0</u>

** Detail may not add due to rounding