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The Economic Impact of the Air Force Phillips Laboratory on the New Mexico Economy, FY94

Bureau of Business and Economic Research

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THE ECONOMIC IMPACT OF THE AIR FORCE PHILLIPS LABORATORY ON THE NEW MEXICO ECONOMY

FY94

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EXECUTIVE SUMMARY

Analysis of the economic impact of the Air Force Phillips Laboratory reveals the Laboratory's substantial contribution to the economy of New Mexico. During FY94 Phillips Laboratory operations accounted for over $153 million in total spending. These activities directly supported 1,192 full-time civilian and military jobs and total salaries and fringe benefits of just over $70 million in New Mexico.

Evaluation of total economic impacts through multiplier techniques included these direct effects as well as secondary impacts that arise from in-state laboratory spending on research contracts, utilities and other outside purchases and successive spending rounds. Highlights of the total economic impact for FY94 indicate that Phillips Laboratory accounts for:

* Approximately 4,048 jobs in New Mexico
* Total wages and salaries of $155 million
* Total personal income of nearly $166 million
* State and local taxes of $16.5 million.

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1.0 INTRODUCTION

Research and development (R&D) facilities funded by the federal government represent one of New Mexico's most important sources of employment and income. One such facility, the Air Force Phillips Laboratory, is a major contributor to the state's economy. In fiscal year 1994 the total budget for this Laboratory was just over $572 million. In excess of $153.6 million, a conservative estimate, was expended within New Mexico.

This report provides an assessment of the economic impact of the Lab on the New Mexico economy by identifying and measuring the jobs and income attributable to the Laboratory. This study is the second produced by the Bureau of Business and Economic Research (BBER) for PL. The Bureau of Business and Economic Research (BBER) first estimated the impact of the Laboratory on the state for FY93[1]. The FY94 report uses the same methodology as was used in the previous report. Since the methodology is the same, portions of the text from the FY93 report have been incorporated into the FY94 document. However, since the FY93 publication, data used in estimating the impacts have been updated. These new data have been utilized in the FY94 product.

Using standard multiplier techniques, primary and secondary rounds of spending are traced through the state economy. Changes in employment, payroll, and state and local tax revenue are derived as measures of the impact of Phillips Laboratory within the state. These impacts are then detailed at the direct and secondary (indirect and induced) levels yielding a comprehensive "snapshot" of the Laboratory's position in the economy of New Mexico for FY94.

A brief discussion concerning the Laboratory's structure, function and interaction in the state sets the base for analysis of economic impact. The profile also illustrates a few major activities of the Laboratory and some of the programs and functions that affect the people of New Mexico.

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[1] The Economic Impact of the Air Force Phillips Laboratory on the New Mexico Economy, FY 1993. BBER, April 1, 1994.

1.1 PROFILE: PHILLIPS LABORATORY

The Air Force's Phillips Laboratory is headquartered at Kirtland AFB, New Mexico. The Laboratory is one of four super laboratories maintained by the Air Force and is considered a national leader in space- and missile-related research and development. The Lab employs approximately 1,900 civilian and military personnel at three locations: Kirtland AFB, New Mexico; Hanscom AFB, Massachusetts and Edwards AFB, California. Almost 60% of these personnel are located at Kirtland.

Research and development (R&D) efforts at the Laboratory are concentrated in seven major technical areas. The primary focus of attention at the Kirtland AFB facility is:

- Space and missile technology,
- Lasers and imaging,
- Advanced weapons and survivability,
- Space experiments and,
- Airborne lasers.

At the Hanscom AFB facility and at the Edwards AFB facility, the major areas of focus are respectively,

- Geophysics R&D and,
- Propulsion R&D.

Appendix A provides fact sheets from the Laboratory which provide more detailed information regarding the Laboratory's seven directorates.

These and many other highly technical programs constitute the core of Phillips Laboratory. However, the Laboratory is also heavily engaged in numerous programs and activities that directly impact New Mexico socially and economically. For example, the Laboratory provides speakers to local community groups and schools, technology displays in malls, schools, conferences, and many other shared resources.

The Laboratory's technology transfer effort has had a growing impact in New Mexico, with staff dedicated to assisting private industry, universities, and other non-federal entities in the state to collaborate with and benefit from its R&D activities.

A major technology transfer mechanism is the Laboratory's Small Business Innovation Research (SBIR) Program, which has provided a number of businesses in New Mexico with funding leading to marketable and innovative applications in the public and private sectors. Other mechanisms include a wide range of alliances, personnel exchange programs, loaned equipment programs, all of which have mutually benefited the Laboratory and its partners in the state.

The Laboratory's interaction with the educational community is a rich resource to the state. Phillips Laboratory takes an active role in New Mexico by sponsoring and participating in many programs for high school and college students. Students with exceptional abilities in science, mathematics, and related areas benefit from programs via employment, tours, mentorship, and guidance. Laboratory employees contribute their off-duty time and talents to civic groups, church activities, etc. For example, PL provides judges to the three regional high school science fairs and for the statewide competition. The Laboratory's commitment to education is also evident through the "High School Apprentice Program." This program provides summer employment by placing students in laboratories with engineers and scientists as mentors. As another example, the Laboratory has a "Stay-in-School Employment Program" which provides year-round, part-time employment for financially needy high school and college students. Appendix B includes a list of the Laboratory's many educational activities.

These activities and programs enhance New Mexico's educational foundation and its ability to grow economically. They also reveal that the social and economic impacts of Phillips Laboratory extends well beyond the jobs and incomes generated by the R&D operations at Kirtland Air Force Base.

The remainder of this report will focus on the economic impacts of Phillips Laboratory on the New Mexico economy. The base period is FY94. Findings are representative of the Laboratory's standing in the state's economy. However, the numerated impacts will undoubtedly vary in other years because of changes in budgets, operations and employment levels.

2.0 ECONOMIC IMPACT ON NEW MEXICO

Economic impacts occur whenever funds enter an economy's spending stream from outside the region. These impacts are most commonly measured and defined through changes in employment and income and are frequently calculated by standard multiplier techniques. This methodology comprises what are referred to as direct, indirect and induced effects.

All federal funds appropriated to the Phillips Laboratory and expended within New Mexico benefit the state each year through increased levels of economic activity. The economic benefits occur in three stages. First, a portion of the outlays directly supports jobs, payroll and fringe benefits in New Mexico. These jobs generate immediate gains in New Mexico household income, which in turn enhances the state's tax base. Secondly, Laboratory expenditures for non-salary items such as R&D contracts with private firms, equipment and utilities indirectly support additional jobs and payroll within the state. Finally, New Mexico gains still further because subsequent spending of Laboratory expenditures within New Mexico by households and businesses induces further gains in income, employment and tax revenue.

The following section presents the basic information necessary to conduct the analysis and to measure the three elements of economic impact. Discussions focus on assumptions, data and calculations necessary to compute the FY94 impact of the Phillips Laboratory in New Mexico. Impacts are presented individually following a display and description of basic information.

2.1 BASIC DATA: PHILLIPS LABORATORY-FY94

Various Phillips Laboratory (PL) departments are responsible for maintaining the Laboratory's employment and financial data provided to the BBER much of the information needed for deriving economic impacts. These data included PL employment and payroll, R&D contract expenditures and other Laboratory spending for outside purchases of goods and services. The information was supplemented by a survey of PL R&D contractors conducted by BBER.

The total FY94 operating budget of PL was just over $572 million. Phillips Laboratory expends significant amounts outside of New Mexico at two other major operating locations in California and Massachusetts as well as with out-of-state R&D private contractors. For the economic impact of Phillips Laboratory on New Mexico we are interested only in the PL expenditures within the state. Thus, a major task was to allocate PL expenditures between in-state and out-of-state. A detailed explanation and presentation of these data are provided below.

2.2 DIRECT IMPACT

The direct impact includes the employment and payroll of Phillips Laboratory workers in New Mexico. Based upon the PL data, average annual employment in New Mexico was 1,192 on a full-time equivalent (FTE) basis.[2] This included 668 civilian positions and 561 active duty military personnel. Combined New Mexico salaries totaled $61.8 million with civilian payroll at slightly over $35 million and military payroll at $26.7 million. Civilian fringe benefits were estimated at another $6.6 million, while the value of military fringe benefits was estimated at $1.8 million.[3]

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[2] Full-time military and civilian was 1,129; part-time civilian employment was 163 (88 PT employees where 1 PT =.5 FTE's and 75 PT summer employees where 1 PT = .25 FTE's).

[3] Military fringe benefits were not provided and therefore were estimated based upon data from the Bureau of Labor Statistics. Only those benefits assumed spent in New Mexico were calculated (health care). At 6.2% of compensation, this yields benefits of $1.8 million.

These PL total employment and payroll data imply that in FY94 Phillips Laboratory paid an annual average salary of $47,964 to civilian workers and $57,941 to military personnel. In a state where the average employee salary was $21,731, Phillips Laboratory represents a high wage employer. The salaries received by PL employees in New Mexico also represent a substantial tax base to state and local governments.

2.2.1 Tax Benefits from Direct Employment

Wage income is subject to the state's individual income tax, and goods and services purchased by PL employees in New Mexico are subject to the gross receipts tax as well as the property tax and other selective sales taxes. State and local taxes paid by PL employees can be approximated from data presented in a report prepared by the New Mexico Taxation and Revenue Department.[4]

This study reports state and local taxes paid by New Mexico households by different income levels. For example, total taxes for households in the $40,000-$50,000 income range represent about 10.25 percent of their income. The direct tax impact of Laboratory employees is estimated at $5.7 million.[5]

2.3 INDIRECT IMPACT

The indirect impact of Phillips Laboratory includes the non-wage and salary expenditures of the Laboratory which are purchased from New Mexico subcontractors and vendors. The most

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[4] Estimated Distribution of the State and Local Tax Burden, New Mexico Fiscal Year 1989, Tax Research and Statistics Office, New Mexico Taxation and Revenue Department.

[5] Because military personnel pay income taxes in their state of permanent residence, it was assumed that only 10% of PL active duty military pay New Mexico income taxes. Non-income taxes in New Mexico average 7.56% of income for the $50,000-$75,000 income class.

significant indirect impact is the estimated $49.9 million which Phillips Laboratory contracts with private R&D contractors in New Mexico. Other measured outside purchases of goods and services from New Mexico vendors include approximately $12.6 million in utility purchases (water and sewer nearly $7.3 million; natural gas and electric at slightly less than $5.3 million, telephone just under $0.5 million), $7.4 million for supplies and materials and $6.9 million in various other non-R&D contractual services such as maintenance and rentals. Additionally, an estimated $6.7 million was expended for contract construction.[6]

Thus, total Phillips Laboratory expenditures in New Mexico total $153.6 million out of the total Laboratory budget of $572.2 million. This includes $70.2 million in direct salaries and fringe benefit impact and $83.5 million in outside purchases from New Mexico businesses. Table 2-1 summarizes these Phillips Laboratory expenditures. Spending and employment details are provided in Appendix C of this report.

2.3.1 Estimation of R&D Impacts

Another major task in the estimation of indirect impacts is to convert the PL expenditures for non-wage and salary categories in Table 2-1 above into employment and payroll generated initially within the New Mexico economy from this indirect spending. For the R&D contracts a series of procedures were followed.

First, a mail survey was conducted of 31 PL contractors who handled 46 contracts amounting to just under $68.2 million. The contractors interviewed were only those indicating that the primary place of performance (PPP) for the contract was in New Mexico and who had contract amounts in excess of $100,000 during FY94. Appendix D contains a copy of the questionnaire. Information was requested about these R&D contractors' in-state expenditures and the employment and payroll supported by PL funding.

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[6] Construction will take place over FY94 and FY95. Expenses have been allocated between these years.

Table 2-1
AIR FORCE PHILLIPS LABORATORY EXPENDITURES WITHIN NEW MEXICO, FY94

Item[1]	FY94 ($ million)
Salaries	$61.8
Fringe Benefits[2]	8.4
R & D Contracts	49.9
Utilities	12.6
Materials & Services	7.4
Construction	6.7
Other	6.9
TOTAL[3]	$153.6

[1] See text for details.
[2] Fringe benefits for military personnel have been estimated and added to total spending.
[3] Totals may not sum due to rounding.

Of the 31 contractors, 19% responded to the survey. The respondents accounted for just under $22.1 million (32%) of the total contract dollars expended where New Mexico was the PPP. The survey revealed that the responding contractors spent almost $13.1 million in salaries and fringe benefits. Additionally, 185 full-time positions and 16 part-time jobs were created due to PL contracts.[7]

Based on a review of the survey methodology, the responders and the non-responders, it was determined that the survey responses were not significantly biased. Analysis suggested that it was unlikely for any particular type(s) of surveyed R&D contractor to be more or less willing to

[7] At 1 PT = .5 FT, this converts to 193 FTE's.

respond to the survey. Thus, it was assumed that the returned surveys were representative of all PL R&D contractors. Results from responders were then applied to known non-responder information.

Responders accounted for about $40.5 million, or 58.7 percent, of the $69 million[8] in total R&D contracts. They spent 54 percent of their R&D contract amounts within the state ($22.1 million). Thus, non-responders were estimated to have spent about $15.5 million in New Mexico.[9] Of this amount, an estimated $9.1 million went to salaries and fringe benefits for 150 employees[10] of non-responders. These salary and employment estimations for non-responders were derived by applying the same as ratio found for the responders.

Phillips Laboratory also employs individuals through the Intergovernmental Personnel Act (IPA). Based on PL data, IPA employment and payroll was estimated at 25 positions and $1.5 million, respectively. The Laboratory also issued interagency funding documents (MIPR, PO) to various government agencies. For FY94 these latter R&D and technical support service contracts amounted to just over $10.4 million with an estimated $6.8 million in payroll supporting 54 positions.

Table 2-2 summarizes the estimated employment and payroll impacts within New Mexico from the PL expenditures for outside R&D contracts. This includes the R&D contractors who responded to the BBER survey, an estimate for non-responders, IPAs, and interagency funding transfers. The total indirect employment from PL R&D contracts is estimated at 422. This represents $30.5 million in salary and fringe benefits.

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[8] This $69 million includes all contracts where New Mexico was the PPP. Contracts under $100,000 where New Mexico was the PPP amounted to $853,533. Contracts over $100,000 amounted to $68,186,993.

[9] Equal to 54% of ($69 million less $40.5 million).

[10] Where 1 PT = .5 FT, 144 FT and 12 PT yields 150 FTE's.

Table 2-2
AIR FORCE PHILLIPS LABORATORY, R&D CONTRACTS

ESITMATED INDIRECT IMPACT ON THE NEW MEXICO ECONOMY

Item[1]	Employment FTE's	Salary & Fringes ($ million)	Total NM Contracts ($ million)
Survey Responders	193	$13.0	$22.1
Non-Responders	150	9.1	15.5
Intergovernmental Personnel Act (IPA's)	25	1.5	1.9
Interagency Funding Transfers	54	6.9	10.4
TOTAL[2]	422	30.5	49.9

[1] See text for details.
[2] Totals may not sum due to rounding.

2.3.2 Estimation of Other Indirect Spending Impacts

Indirect impacts were also measured for the $33.6 million expended by PL within the state for non-R&D contracts, e.g., expenditures for utilities, supplies, materials, equipment and construction. Except in the case of construction (see section 2.3.2.1), estimates of employment and payroll generated in New Mexico from these outside purchases of goods and services were derived after first allocating spending amounts to different industrial sectors. Then based upon selected data sources for New Mexico, payroll-to-gross revenue ratios were calculated and average industry salaries were used to derive employment. This parallels the methodology previously employed by BBER in the FY93 report. Since the FY93 report however, more current information about the spending patterns of New Mexico businesses has become available. Further, greater detail about spending was provided by Phillip's Laboratory and the surveyed R&D contractors. Hence, greater accuracy can be obtained in calculating salary and employment

impacts within the major industrial sectors. The methodology is illustrated for wholesale outlays.[11]

Phillip's Laboratory data show spending of $2.02 million for goods obtained in the Wholesale Trade sector.[12] To obtain an estimate of indirect impact it was assumed that approximately 11% percent of the $2.02 million ($222,000[13]) represented the salaries paid to wholesale trade employees. Additionally, the average annual salary paid in this sector was $24,485.[14] The payroll-to-gross revenue ratio and average salary was computed from gross revenue, payroll, and employment data from the various Census of Business reports and from "County Business Patterns".[15] Division of the gross payroll dollars by the average annual wage yields 9 employees within this sector in New Mexico. These results are displayed in Table 2-3 beside the wholesale trade row heading.

With the exception the estimates of construction salaries and employment, a similar process was followed for the remaining $24.8 million PL non-salary expenditures shown in Table 2-1.

2.3.2.1 Construction Salaries and Employment

During FY94 two major construction projects were started (see Appendix D for details). These projects, a Space Structures / Composites Laboratory and an Aerospace Engineering

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[11] Though the procedure for calculating these indirect impacts is relatively straight forward, non-salary spending encompasses a vast range of industry categories. Computing indirect effects involves many separate assumptions. Caution is necessary when applying the results.

[12] These funds were mainly spent on the purchase of equipment.

[13] Salaries and fringes = $0.27 million.

[14] Excludes fringe benefits.

[15] US Department of Commerce, Economics and Statistics Administration, Bureau of the Census. 1992 Census of Retail Trade, 1992 Census of Service Industries, 1991 Annual Survey of Manufactures, 1992 Census of Wholesale Trade and, County Business Patterns, 1992: New Mexico.

Laboratory, will not be completed until FY95. The total project cost for construction amounts to $17.8 million. Allocation of the project costs over the two year project life was prorated by the number of months of work during each fiscal year. Further, determinations were made regarding how much of these funds would stay in New Mexico. Ultimately, it was determined that $12.5 million of the $17.8 million would remain in New Mexico. Of this $12.5 million, $6.7 was allocated to FY94 and $5.8 million to FY 95. Data on spending by construction contractors indicates that approximately $1.8 million was spent during FY94 for salaries and fringe benefits. PL construction spending yielded 45 jobs.

2.3.2.2 Health Care Salaries and Employment

With one exception, health insurance, fringe benefits were excluded from the estimates of economic impact. The vast majority of non-health related benefits are assumed transferred out-of-state and thus have insignificant immediate impact in the state. On the other hand, health insurance benefits paid to residents are expended mostly within New Mexico. Thus, it is reasonable to include this fringe benefit in the calculation of indirect economic impact.

A report by the Bureau of Labor Statistics estimates health insurance benefits at 6.2 percent of employee compensation in private industry.[16] This ratio was applied throughout this study for all PL spending areas except R&D contractors who were asked to supply actual dollar values in the survey. By using this 6.2 percent value, an approximation of economic impact due to the health insurance benefits can be determined. The Economic Census of Services for New Mexico shows that health industry payroll represents about 41.9 percent of total health care spending.[17] The average annual salary in the health care industry was also obtained from the census data.

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[16] "Cost of Employee Compensation in Public and Private Sectors," Monthly Labor Review. U.S. Department of Labor, Bureau of Labor Statistics, May, 1994.

[17] 1992 Census of Services Industries, New Mexico. U.S. Department of Commerce. Bureau of the Census.

Adjusted for inflation, the 1993 salary estimate for New Mexico is $26,173. Assumptions presented earlier indicate that direct and indirect salaries included about $6.9 million in health insurance benefits. Thus, health industry salaries are estimated at $3.6 million (41.9%), supporting 114 positions in the New Mexico health care industry. The health care business is included in the service sector hence, salary and employment data is aggregated into this sector.

2.3.2.3 Salaries and Employment Due to PL Visitors

Each year thousands of out-of-state visitors come to Albuquerque on business at Phillips Laboratory or to attend conferences sponsored by PL. The spending of these visitors represents additional economic impact to the New Mexico economy. These visitor dollars are expended mainly in the service (hotels, car rentals, etc.) and in the retail (food, gifts, etc.) sectors. Based upon previous tourism work done at the BBER, it was estimated that approximately 60 percent of the visitor dollar is destined for the retail sector and the remaining 40% for the service sector.

Information was not provided for FY94 visitor numbers and spending. However, using the figures provided in the FY93 study, an approximation of visitor impact was generated, A survey done for the FY93 study found visitor spending at $2.9 million. Since Lab spending fell by approximately 20% between FY93 and FY94, it was assumed that visitor spending would have behaved similarly. From this assumption, visitor spending was estimated at $2.32 million. Using the previously discussed ratio of 60 percent retail and 40% service, the spending was disbursed by sector. The indirect employment and payroll impacts of this visitor spending were estimated following the same methodology discussed above for wholesale trade spending and health insurance. For the retail sector, salaries were estimated to be $0.314 million with 25 jobs created. For the service sector, total salaries and fringes were determined to be $0.303 million with 26 jobs created.

2.3.3 Summary of Other Indirect Impacts

Table 2-3 summaries the indirect employment and payroll impacts of non-R&D expenditures by Phillips Laboratory within the New Mexico economy. Table 2-3 provides a breakout by sector based upon BBER assignment of non-R&D spending to a particular industry. Non-R&D expenditures by Phillips Laboratory indirectly support 464 jobs and $14.9 million in payroll within New Mexico.

Table 2-3
AIR FORCE PHILLIPS LABORATORY, NON-R&D CONTRACTS

ESITMATED INDIRECT IMPACT ON THE NEW MEXICO ECONOMY

Sector	Employment	Salaries & Fringes ($ million)
Transportation, Communication & Utilities	99	5.2
Retail Trade	55	0.7
Wholesale Trade	9	0.3
Manufacturing	2	0.0
Services	254	6.9
Construction	45	1.8
TOTAL[1]	464	14.9

[1] Totals may not sum due to rounding.

Combining Tables 2-2 and 2-3, a total of 886 jobs are indirectly created within the New Mexico economy by the non-wage and salary expenditures of the Phillips Laboratory. These 886 jobs generate an estimated $45.5 in salaries and fringe benefits.

2.3.4 Tax Benefits from Indirect Employment

Salaries paid to those employed due to indirect spending by PL are subject to the state's individual income tax. Further, gross receipts taxes are charged on goods and services purchased by these employees. Property taxes and other selective sales taxes are also paid from the salaries paid to these personnel.

Using the same methodology as presented in section 2.2.1 previously, the taxes paid by those employed due to PL's indirect spending were estimated. Tax brackets were based upon the average salary within each sector. Hence, in the retail sector, where the average salary was $11,518, the tax rate used was 12.1%. Using this 12.1% rate, tax revenue from employees in the retail sector would amount to $0.072 million. Summing across all sectors gives rise to the taxes generated via indirect employment. Based upon this, the total tax benefit to the state was estimated at $3.7 million.

2.4 INDUCED IMPACTS

The analysis above has shown that expenditures within New Mexico by Phillips Laboratory in FY94 supported 2,078 jobs--1,192 directly and 886 indirectly. Direct and indirect salaries came to over $97.6 million[18], generating over $9.4 million in state and local taxes. However, these numbers do not include all impacts. Purchases of goods and services by household recipients of this $97.6 million payroll also generate further economic activity, as does additional in-state purchases by PL subcontractors and vendors. These "induced" economic impacts are the jobs, salaries and taxes created in local retail trade, services, government and construction industries.

[18] Salaries only, fringe benefits have been excluded from this value.

2.4.1 FOR-UNM Model

Induced effects were measured by using the FOR-UNM econometric model of the New Mexico economy which has been managed by BBER for the last fourteen years as part of a state economic forecast service. The FOR-UNM model uses quarterly income and employment data by sector to derive statistical relationships within the New Mexico economy. A more complete description of the model's structure, its numerous components and operational makeup is provided in Appendix F. A few explanatory highlights are briefly discussed here to demonstrate how the FOR-UNM model was used to generate the induced economic impacts.

FOR-UNM has produced economic forecasts of the state and its metropolitan areas for many years. The econometric model is maintained and solved on a PC 486 as a state-of-the-art regional income/employment model. Sectoral detail includes the major two digit Standard Industrial Code (SIC) such as manufacturing, mining, trade, services, construction and government. The model captures the interaction of the New Mexico economy with the U.S. economy as well as the interaction of key state economic variables such as personal income with state sectoral employment. The FOR-UNM model is ideally structured to simulate external economic shocks to the New Mexico economy and to estimate the multiplier effects of these shocks. The induced economic impacts of the Phillips Laboratory were measured by incorporating the direct and known indirect PL impacts into the model as an external economic shock.

2.4.2 Estimating Induced Effects

First, the FOR-UNM model was solved without regard to PL spending as a baseline. Then, the calculated direct and indirect jobs and salaries attributed to PL expenditures within New Mexico were added to the model by appropriate sectors,[19] and the model was resolved.

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[19] For example, PL federal civilian employees were added to the federal government sector; PL military to military employment in the model; indirect R&D contractor jobs were added to the services sector; and so on.

The baseline model solution provided totals which described the New Mexico economy without regard to Phillips Laboratory expenditures in the state, providing, for example, total state employment and personal income. The model simulation adding in the Phillips Laboratory direct and indirect jobs and salaries produced new totals for the New Mexico economy. Comparing the baseline and the Phillips Laboratory model solutions then measures the total (direct plus indirect plus induced) impact of PL spending during FY94. The induced economic impacts can be measured as the total impact from the FOR-UNM model less the direct and indirect impacts measured separately.

The induced economic impacts obtained from the FOR-UNM model were 1,971 jobs, $57.4 million wages and salaries and $11 million in proprietors' income.[20] The induced wage and salary income translates into $6 million in state and local taxes paid[21]. Taxes paid by proprietors are more difficult to approximate. This study presumes 10.0 percent for state and local taxes, producing another $1.1 million in state and local taxes generated from the $11 million proprietors' income.

2.5 TOTAL ECONOMIC IMPACTS

Combining the direct, indirect and induced economic effects of the Air Force Phillips Laboratory indicates that it has a substantial economic impact on the state's economy. Economic analysis has shown that the $153.6 million of PL expenditures in New Mexico supports 4,048 total jobs with a payroll of $155 million. Counting proprietors' income as well as wages and salaries, state personal income of $166.0 million is generated by PL spending within New Mexico. Finally, PL expenditures are responsible for the payment of $16.5 million in state and local taxes in New Mexico. These impacts are summarized in table 2-4.

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[20] Proprietors' income is a measure of the income of self-employed small businesses in New Mexico.

[21] Using a tax rate of 10.47%.

Table 2-4
AIR FORCE PHILLIPS LABORATORY, FY94

TOTAL IMPACT ON THE NEW MEXICO ECONOMY

Impact	Employment FTE's	Salaries ($ million)	State & Local Taxes ($ million)
Direct	1,192	$61.8	$5.7
Indirect	886	35.8	3.7
Induced[1]	1,971	68.5	7.1
TOTAL[2]	4,048	166.0	16.5

[1] Includes $11 million in proprietor's income with $1.1 million in state and local taxes paid from this proprietor's income.
[2] Totals may not sum due to rounding.

Though this study focuses on statewide impacts, the vast majority of PL economic activity occurs in the Albuquerque area. Indeed, the FOR-UNM model calculations indicated that the Albuquerque area gained about three quarters of the 4,048 jobs and $166 million income supported by PL expenditures.

It is imperative to note that this document represents a specific point in time (FY94). Different funding amounts and different distributions of these resources will alter the impact of the Lab on the New Mexico economy. For example, in the FY93 report, no construction spending was reported. In FY94, several construction projects had been started. Not only does this add new funds to the PL total budget, but it adds funds in an industry where the spent monies are more likely to remain in state, e.g., construction personnel will likely be hired from an in-state labor force. Ultimately, changes in the total dollars provided to the Lab and how these dollars are spent by the Lab will directly impact the state. Given that budgets and priorities change over time, new income and employment impacts can be expected in the future.

3.0 CONCLUSION

This report has reviewed the total economic impact of the Phillips Laboratory resulting from its spending and activities during FY94. Standard economic multiplier techniques in conjunction with the FOR-UNM forecasting model were applied to identify and measure the economic benefits to New Mexico. Findings clearly demonstrate the importance of the facility to the state economy. An estimated 4,048 jobs were supported, generating wages of $155 million and $166 million in personal income. Further, it was calculated that $16.5 million in state and local taxes.

To gain perspective regarding the laboratory's scope in New Mexico, derived impact estimates were compared with FY94 figures for the entire state. Figures for this period were: 730,072[22] civilian and military jobs, $15.7 billion[23] in wage and salary disbursements. Thus, Phillips Laboratory directly or indirectly was responsible for 0.56 percent of employment, 1.06 percent of wages and salaries.

Taxes in FY94 in New Mexico were around $2.4 billion.[24] The $16.5 million estimate shown in Table 2-4 represents about 0.69 percent of total state and local tax revenue.

This report also brings to light the less obvious benefits such as the many educational programs supported by the Laboratory and the various cooperative programs and agreements with state government and the state's universities. The social and economic interaction of the Laboratory is clearly a source of benefit to New Mexico.

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[22] Derived from "Quarterly Personal Income", Bureau of Economic Analysis, REIS series.

[23] Derived from "Table A", NM Department of Labor and "Atlas / Data Abstract for the US & Selected Areas (FY94), US Department of Defense.

[24] Actual state revenues for FY94 less severance taxes.