



# Impact of New Economic Activity on Lea County, New Mexico: Zia Park Racino and National Enrichment Facility

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## EXECUTIVE SUMMARY

There will be significant positive economic impact on the economy of Lea County, New Mexico from the commencement of operations of Zia Park Race Track and Black Gold Casino (hereafter Zia Park Racino) and the National Enrichment Facility (NEF).

Officials at Zia Park report that projected annual revenues are \$45,000,000 with 600 slot machines. Employment is expected to be 180 workers year round and 350 workers during the racing season. Under the “Best Estimate” scenario, gross receipts in Lea County will increase by \$54,298,148, household incomes will increase by \$20,222,258, and employment will increase by 1,199. This is in addition to the substantial contribution to the Lea County economy arising from construction of Zia Park, which occurred prior to the time period of this study.

The impact of NEF is divided into two phases; construction (8 years) and operations. NEF expects to directly employ an average of 400 construction jobs during the 8-year construction period with annual expenditures of \$48.6 million in Lea County. It is expected that gross receipts in Lea County will increase by \$74,940,023. Household incomes would increase by \$26,713,943. Employment will increase by 971 jobs. For the Operation Phase, NEF expects to directly employ 210 persons at its Lea County facility with an average expenditure of \$20.1 million dollars locally. This spending is expected to generate \$40,409,018 in gross receipts, \$15,900,477 in household earnings, and 410 jobs.

For the NEF Construction Phase, household formation arising from the Racino and from NEF is expected to be between 1367 and 1665. Employment is projected to vary between 2972 and 3183. School age population is expected to vary between 713 and

890. For the Operation Phase of NEF, household formation is expected to vary between 979 and 1277. Population is expected to vary between 2594 and 3384. School age population is expected to vary between 581 and 758.

Under the best estimate scenario, the total amount of taxes (personal income taxes, corporate income taxes, gross receipts taxes, and property taxes) generated is \$10.9 million in the construction phase and almost \$8.5 million in the operation phase. In the low estimate scenario, the amount of taxes generated is \$10 million in the construction phase and \$7.6 million in the operations phase. The high estimate generates \$11.9 million in the construction phase and \$10.7 million in the operations phase.

Utilities will greatly benefit from increased economic growth arising from Zia Park and NEF. There is sufficient water capacity to supply water need for current and projected populations and economic activity. Water rates will require only a small adjustments (3% or less) over the next 10 years to accommodate the projected growth scenarios. The waste-water plant is now at capacity and there are current plans to increase capacity, even without the economic growth caused by Zia Park Racino and NEF. This expansion will involve considerable costs. The increase economic growth associated with the Zia Park and NEF will help ameliorate the costs of the plant by more fully utilizing the increased capacity. Waste-water rates will still increase but not to the same extent as without the Racino and NEF. In other words, everyone will pay more for utility service without these developments.

# Impact of New Economic Activity on the Economy of Lea County, New Mexico: Zia Park Racino and National Enrichment Facility

By Christopher Erickson, Ph.D., J. Thomas McGuckin, Ph.D.,  
and Anthony V. Popp, Ph.D.

## INTRODUCTION

The purpose of this report is to determine the impact on the economy of Lea County, New Mexico, arising from the commencement of operations of Zia Park Race Track and Black Gold Casino (hereafter Zia Park Racino or ZIA) and the National Enrichment Facility (NEF). Indeed, Lea County is an economy in transition. Zia Park Racino has commenced limited operations and is scheduled to begin horse racing September 23, 2005<sup>1</sup>. The NEF is a uranium reprocessing plant proposed for Eunice, New Mexico. The NEF is currently under regulatory review, and the exact date of for the commencement of operations is uncertain. Nevertheless, the NEF has the potential to substantially restructure the economy of Lea County. The Zia Park Racino and NEF are very different but both have the potential for becoming significant industries for Lea County and potential engines for economic growth.

In accordance with the agreement between New Mexico State University (NMSU) and the Economic Development Corporation of Lea County (EDC), this report represents a final report, and includes impact results for output, earnings, employment, population, education, and tax revenue. In preparing this report, the standard economic methodology known as impact analysis was used. This methodology measures the total impact on a local economy by taking into account both direct and indirect effects of changes in expenditure. Using impact analysis, we have been able to estimate the effect

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<sup>1</sup> See New Mexico Racing Commission, [http://nmrc.state.nm.us/site/race\\_dates\\_00.html](http://nmrc.state.nm.us/site/race_dates_00.html).

of the Zia Racino and the NEF on economic activity in Lea County. We have relied on public records of the U.S. Nuclear Regulatory Commission, the New Mexico Racing Commission, the City of Hobbs, and Zia Partners. The authors of the report are Drs. Christopher A. Erickson, J. Thomas McGuckin and Anthony V. Popp, members of the faculty of the Department of Economics and International Business at NMSU. Their vitae will be included in an appendix to the final report.

### **METHODOLOGY: IMPACT ANALYSIS AND THE MULTIPLIER PROCESS**

The standard methodology used to calculate the effect of new economic activity on a local economy is Impact Analysis, which involves the use of a multiplier to estimate the direct and indirect impact of a change in spending. The basic premise underling the multiplier process is that one individual's spending is another person's income. An initial injection of funds into an economy will stimulate the recipient to spend. The spending will become income for another. The second person will spend some of that income which will become a third person's income, and so on. Of course, not all of the initial injection of funds stays in the local economy. Some will be saved, some will be paid in taxes, and some of it will be spent on goods and services outside of the local area.

For example, a local business person sells a one dollar item to a customer that resides out of state. The local area has just received an injection equivalent to one dollar in gross receipts. From that dollar the businessperson will pay wages, taxes, and the cost of the item sold. What is left over is profit. Suppose that the cost of the item is forty cents, business taxes are ten cents, and that the wages and the profits that become the owner's income total fifty cents. Of the forty cents in cost of the item, twenty-five cents

represents expenditures from outside of the local area and fifteen cents represents expenditures in the local area. Of the fifty cents in wages and profits retained by the owner as his own income, suppose that fifteen cents goes to personal taxes, five cents is saved and that five cents is spent on items outside the local area. The following table summarizes the example to this point. The column on the left below indicates the distribution of the initial one dollar of gross receipts. The column on the right shows how the individual spends the income.

<u>Business Expenditures</u>	<u>Personal Expenditures</u>
\$ .10 business taxes	\$ .15 personal taxes
.25 out of area cost	.05 savings
.15 local cost	.05 out of area spending
<u>.50 wages and profits</u>	<u>.25 local spending</u>
\$1.00 total initial gross receipts	\$ .50 total wages and profits

From this information the total effect of the one dollar that is spent in the local community can be calculated. It is the amount the local business re-spends, fifteen cents, and what the owner re-spends locally from his personal income, twenty five cents. The total is forty cents and this amount becomes gross receipts for other businesses in the area.

The total increase in gross receipts so far is \$1.40 – the initial \$1 spent by the out-of-state customer plus the forty cents spent within the local economy. The process continues with the next addition to gross receipts that results from the spending of the forty cents. If the same cost and spending distributions are assumed, sixteen cents of the forty cents are re-spent in the economy in this third round. In the fourth round, \$.064 would be spent. Notice that the amount re-spent becomes smaller and smaller in each

round until it is too small to count. The total amount of gross receipts generated is equal to \$1.67. The following table summarizes this multiplier process.

\$1.00	initial spending
.40	second round
.160	third round
.064	fourth round
.0256	fifth round
<hr/>	
\$1.67	Total Spending

One dollar of new spending will recycle through the economy generating total spending of one dollar and sixty-seven cents. Thus, the multiplier for this hypothetical area is 1.67.<sup>2</sup>

The size of a community's multiplier is a function of the local economy's propensity to import from outside the area, the propensity of individuals to save, and the amount of taxes paid. The larger and more diverse the economic base, the larger the multiplier will likely be as individuals will not need to go outside the area to buy desired goods and services. The estimates of the multiplier for the economy of the United States range from as small as 2.0 to as much as 4.0. Individual states will have multipliers smaller than this and usually range between 2.0 and 2.5.

#### **IMPACT OF ZIA PARK RACINO ON LEA COUNTY**

This section deals with the economic impact of the Zia Park Racino on Lea County. The analysis does not deal with the impact of the multi-million dollar

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<sup>2</sup> In the context of the current study, the diversion of business from Ruidoso Downs to Hobbs represents not an injection but a leakage, so the multiplier process would work in reverse. A dollar of lost gross receipts from the Ruidoso Downs facility will have both a direct negative impact on the local economy via reduced expenditures by Ruidoso Downs but also an indirect effect due to reduced spending by local suppliers and employees. These direct and indirect effects are captured through impact analysis.

construction budget of the Racino because construction was completed prior to the period of analysis.

We obtained multipliers for Lea County from the U.S. Department of Commerce, Bureau of Economic Analysis (BEA). The BEA has developed U.S. multipliers based on an input-output table reflecting the structure of over 500 U.S. industries. This information in conjunction with county wage and salary data has allowed them to estimate multipliers for smaller economic units such as counties. The multipliers are calculated based on four-digit North American Industrial Classification System (NAICS) codes.<sup>3</sup> The multiplier used for the Zia Racino are those for the industry classification of “713A00 – Other amusement, gambling and recreation industries.” In addition to an output multiplier, earnings and employment multipliers are provided by the BEA. The multipliers used in this study are:

Output Multiplier	1.4494 per dollar of new spending
Earnings multiplier	.5398 per dollar of new output
Employment multiplier	31.9231 per million dollars of new output

The output multiplier indicates that every one dollar of new spending at Zia Park Racino will create \$1.4494 of gross receipts. The earnings multiplier indicates that 53.98 percent of each dollar of initial gross receipts represents earnings to local households.<sup>4</sup> The employment multiplier indicates that for every one million of initial output gained, 31.9231 jobs are created in the local economy.<sup>5</sup>

Officials at Zia Park report that projected revenues are \$45,000,000 with 600 slot machines. Employment is expected to be 180 workers year round and 350 workers during

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<sup>3</sup> A detailed description of the methodology used by BEA in developing local multipliers is available at [www.bea.doc.gov/rims.htm](http://www.bea.doc.gov/rims.htm).

<sup>4</sup> Household earnings include wages and salaries paid to employees, dividends and proprietor incomes.

<sup>5</sup> Employment is a measure of the number of persons subject to social security withholding (including those who are self-employed). Most agricultural employment is excluded.

the racing season. However, not all of the revenue generated at Zia Park is new spending to Lea County. Some of this spending is diverted from existing businesses. In particular, spending at the Racino by Lea County residents is spending that would have occurred in Lea County regardless of the existence of Zia Park. For example, some Lea County residents may choose to patronize the Racino rather than a local restaurant; some Lea County residents might choose to spend an evening gaming rather than purchase a new video game from a local retailer. It will also be true that some of the spending of nonresidents of Lea County at the Racino would have occurred in Lea County as it represents spending by travelers who would have visited through Lea County whether the park existed or not. These two categories of spending – by residents and by nonresidents – that would have occurred with or without the Racino must be netted out to correctly calculate the true impact of the Racino on the local economy.

To calculate the economic impact of the Racino requires estimating how much the \$45,000,000 in revenue is diverted from spending that would have occurred in Lea County if the Racino did not exist. Zia Partners, in public filings with the New Mexico Racing Commission, estimate that 66.7 percent of visits to the Racino will be by patrons living within 50 miles. The adult population of the 50 mile radius is 354,840, of which 7.1 percent live in Lea County. If it is assumed that the propensity of Lea County residents to visit the Racino is the same as the average 50 mile radius resident, 4.9 percent of spending at the Racino will be from Lea County residents. However, an important determinant of casino patronage is travel distance. It can be expected that patronage by Lea County residences will be higher than the typical resident within the 50-mile radius since most Lea County Residents live in close proximity to the Racino..

Accordingly, we assume that 7.5 percent of spending at the Racino is by Lea County residents. Of the remaining 92.5 percent, we assume that 10 percent of this (i.e., 9.25 percent of the original total) is spending that would of occurred in Lea County with or without the Racino. That is, it is assumed that 9.25 percent of the spending at the Racino is tourist dollars diverted from Lea County businesses. From this, it follows that 83.25 percent, or \$37,426,500 of the spending at the Racino is new spending in Lea County.

NMSU Exhibit 1 provides estimates of the economic impact of the Zia Park Racino of Lea County. Three scenarios are presented, labeled “Best Estimate”, “Low Estimate” and “High Estimate”. The “Best Estimate” is based on the calculations in the previous paragraph and assumes that 83.25 percent of spending at the Racino represents new spending in Lea County. Under this scenario, gross receipts in Lea County would increase by \$54,298,148, household incomes increase by \$20,222,258, and employment increases by 1,196. The “Low Estimate” assumes that only 70 percent of spending at the Racino is new spending to Lea County, which we view as the most pessimistic estimate that is reasonable. With this scenario, the Racino will generate \$45,656,100 in new gross receipts, \$17,003,700 in household earnings, and 1,006 new jobs. The “High Estimate” Scenario assumes that all spending at the Racino is new spending. Under this scenario, gross receipts would increase by \$65,223,000, household earnings would increase by \$24,291,000, and jobs would increase by 1,437.

#### **IMPACT OF NATIONAL ENRICHMENT FACILITY ON LEA COUNTY**

The NEF is a very complex construction project that is still several years from regulatory approval and is projected to take eight years to complete. Therefore, to

understand the impact of the NEF on Lea County, it is necessary to look at the construction phase of NEF separate from operation phase.

*Construction Phase:* The multipliers used for construction are based on the industry classification of “230000 – Construction.” The multipliers are:

Output Multiplier	1.5415 per dollar of construction spending
Earnings multiplier	.5495 per dollar of output
Employment multiplier	19.9720 per million dollar of output

That is, every dollar construction spending will create \$1.5415 of gross receipts. The earnings multiplier indicates that 54.95 percent of each initial dollar of construction spending becomes earning to local households. The employment multiplier indicates that for every one million of initial construction spending, 19.9720 jobs are created in the local economy

Public filings with The Nuclear Regulatory Agency (NUREG 1790) indicates that NEF expects to directly employ an average of 400 construction jobs during the 8-year construction period with annual expenditures of \$48.6 million in Lea County.<sup>6</sup> NMSU Exhibit 2 presents the calculated impact of this construction spending on the Lea County economy. It is expected that gross receipts in Lea County will increase by \$74,940,023. Household incomes would increase by \$26,713,943. Employment will increase by 971 jobs.

*Operation Phase:* NEF is a relatively unique production facility. Certainly no multipliers for a uranium processing plant exist for Lea County, as no such facility is currently operating. Rather than use predetermined multipliers provided by BEA, multipliers were created using the “bill-of-goods” approach. With this technique, each major category of expenditure is treated as a separate item. The total impact is then

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<sup>6</sup> Total construction cost will be \$1.2 billion of which \$390 million is expected to be spent in Lea County.

determined by totaling the impact of each expenditure category. Data necessary to make these calculations was obtained from Appendix F of NUREG 1790. The implied multipliers are:

Output Multiplier	2.0087 per dollar of operating budget
Earnings multiplier	.7904 per dollar of operating budget
Employment multiplier	20.3808 per million dollar of operating budget

That is, every dollar of operating budget will create \$2.0087 of gross receipts. The earnings multiplier indicates that 79.04 percent of each dollar of operating budget becomes earning to local households. The employment multiplier indicates that for every one million of operating budget, 20.3808 jobs are created in the local economy.

NMSU Exhibit 3 reports results for the Operation Phase of the NEF. NEF expects to directly employ 210 persons at its Lea County facility with an average expenditure of \$20.1 million dollars locally. This spending is expected to generate \$40,409,018 in gross receipts, \$15,900,477 in household earnings, and 410 jobs.

### **HOUSEHOLD FORMATION, POPULATION AND SCHOOL ENROLMENT**

Job growth is used to drive demographics. Specifically, census data is used to calculate the historical relationships between jobs, households, population, and school enrollment. The results are given in NMSU Exhibit 4. To estimate household formation, the average number of households per job was calculated. This ratio turned out to be .6914. That is, there is approximately a 70 percent chance that a new worker will create a new household and 30 percent chance that a job will belong to a person who is already resident in the County.

To calculate population, it is assumed that 75 percent of households formed are occupied by families and that the average household consists of 3.2 persons. It is assumed that 25 percent of households formed consist of a single person. These values are derived from census data and are consistent with historical experience. Finally, the school age population is calculated as a percentage of children between ages five and 18 in the general population, which is 22.4 percent as of the 2000 census.

The results are given in NMSU Exhibit 4. Panel A gives values for the NEF Construction Phase. Household formation arising from the Racino and from NEF is expected to be between 1367 and 1665. School age population is expected to vary between 713 and 890. Panel B gives results for the Operation Phase of NEF. Household formation is expected to vary between 979 and 1277. Population is expected to vary between 2594 and 3384. School age population is expected to vary between 581 and 758.

#### **TAX REVENUE IMPLICATIONS**

The generation of output (gross receipts), earnings and employment generate revenues to the state, region, and county. This section of the report provides estimates of personal income taxes, corporate income taxes, gross receipts taxes, and property taxes from economic activity at the Zia Park Racino and at NEF.

The methodology used in this study relies on the historic average revenues generated through the spending and the receipt of earnings. Data have been collected on the average taxes paid per spending and per earnings for the county and for the state.

*Gross Receipt Tax Revenues:* The state, county, and municipalities within the county levy gross receipt taxes. The current levies are listed in NMSU Exhibit 5. The

revenue obtained through the imposition of the gross receipts tax is dependent on the location of the spending that takes place. This study will use a rate of 6.5%, which is a weighted average of the rates listed in NMSU Exhibit 5, as the tax rate for all receipts generated by the multiplier process described above.

At one time, all the gross receipts of businesses in New Mexico were subject to gross receipts tax. Over the years exemptions to the tax have been established through the legislative process. As of January 1, 2005, food and prescriptions items became exempted, for example. The output numbers generated in the first part of this report represent the gross receipts received by businesses. Data on gross receipts of businesses in Lea County for 2002, 2003, and 2004 were obtained from the New Mexico Department of Taxation and Revenue. That data included the information on the total of gross receipts, taxable gross receipts, and revenue obtained from the imposition of the tax. This data reveals that only 75% of the gross receipts received by business are taxed, the other 25% of the receipts are exempted from taxation. The 6.5% tax rate will be applied to only 75% of the gross receipts generated.<sup>7</sup>

*Personal and Corporate Income Taxes:* The earnings estimated as part of the impact analysis is indicative of, but not identical to adjusted gross income or taxable income as defined in the New Mexico income tax code. Ideally, these earnings would be attributed to individuals and families and the income due would be calculated. This cannot be done given the limitations of the existing data. The amount of revenue can be estimated by taking the ratio of revenue received by the state to the earnings generated in the state to obtain an average personal income tax rate based on earnings. Data on the total personal income tax revenues generated at the state level were obtained from the

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<sup>7</sup> That is, Change in Gross Receipts = .75 x .065 x Change in Gross Receipts.

New Mexico Department of Taxation and Revenue and estimated earnings were obtained from the Bureau of Economic Analysis. The personal income tax revenue is, on average, 2.7% of earnings. This rate is applied to the earnings generated in this study to estimate the personal income tax revenue that will be received by the state.<sup>8</sup>

There is no easy way to estimate the amount of corporate income tax received by the state. The New Mexico tax code piggybacks on the federal rate and, therefore, no data is available. For the last few years the corporate tax revenue received by the state has averaged about 12% of the personal income tax revenue received by the state. The corporate tax revenue generated in this study will simply be 12% of the income tax revenue generated.<sup>9</sup>

*Property Taxes:* Each of the municipalities, as well as the county, levy different rates of tax for property. Since the analysis is being done on a county-level basis, there is no way of knowing where in the county new housing will be erected. The New Mexico Taxation and Revenue Department publishes a document each year titled “Property Tax Facts.” Table 10 of the “2004 Property Tax Facts” provides weighted average tax rates per county. The weighted average tax rates for Lea County are 26.862 ??? for residential property and 27.376 ?? for non-residential property.

The formation of households has been provided elsewhere in this report. According to the 2000 Census, the vacancy rate of household units was 16% and totaled approximately 3,700 units. Of the units that were occupied, 73% were owner occupied and 27% were renter occupied. The homeowner vacancy rate was 3.6% and the rental vacancy rate was 18.7%. For the purposes of this report, it will be assumed that 73% of

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<sup>8</sup> Thus Change in Personal Income Tax Revenue = .027 x Change in House Hold Earnings.

<sup>9</sup> That is, Change in Corporate Income Tax = .12 x .027 x Change in Household Earnings.

the new household formations will desire owner occupied units which must be built since the homeowner vacancy rate is so low. It will also be assumed that households that want to rent will rent existing units.

Discussions with the Lea County Assessor's office indicate that land prices have increased recently due to other commercial activity in the area. It will be assumed that these values will stay the same and the only increase in property tax collections due to the Racino and NEF will be because of land improvements (i.e., construction of dwellings). Residential building costs have been reported to be \$75-\$85 per square foot for smaller homes and up to \$100 per square foot for larger homes. For the purposes of this report, a per square foot construction cost of \$85 will be used and the average size of home will be 1,800 square feet.

It is more difficult to calculate non-residential property values. However the "2004 Property Tax Facts" document indicates that in tax year 2003 for every one dollar of residential value there was \$1.49 in non-residential property value in Lea County. This ratio will be used in the calculation of new non-residential property taxes generated.<sup>10</sup>

*Lodger's Tax:* Hobbs and Lovington levy lodger's taxes at the rate of 5%. Gross receipts from accommodations/hotels is approximately 0.327% of all gross receipts. Hobbs and Lovington account for approximately 70% of the gross receipts for the county. The lodger's tax rate will be applied to the proportion of accommodations/hotels taxable gross receipts attributed to Hobbs and Lovington.

*Total Taxes:* NMSU Exhibit 6 provides a listing of the amount of taxes that will be generated through the increase in economic activity of the Racino and NEF. Panel A

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<sup>10</sup> That is, Change in Non-residential Value = 1.49 \* Change in Residential Value.

provides the tax revenues with respect to the operation of the Racino and the construction phase of NEF. Panel B provides the tax revenues with respect to the operation of the Racino and the operation of NEF. The taxes are calculated as described above. When interpreting NMSU Exhibit 6, it is important to keep in mind that Panel A and Panel B measure increased tax revenue relative to the alternative that the Racino and NEF did not exist. That is, Panel B does not represent an increase in tax revenue during the Operation Phase relative to the Construction Phase. Indeed, examination of Panel B indicates that tax revenues will *fall* post construction.

In addition to the amount of taxes generated, information is provided with respect to the increase in residential units, residential and non-residential property values, and residential and non-residential taxable values.

Six scenarios are laid out corresponding to the three scenarios for the Racino – best estimate, low estimate and high estimate – and to the construction and operation phase of the NEF. Under the best estimate scenario, the total amount of taxes generated is \$10.9 million in the construction phase and almost \$8.5 million in the operation phase. In the low estimate scenario, the amount of taxes generated is \$10 million in the construction phase and \$7.6 million in the operations phase. The high estimate generates \$11.9 million in the construction phase and \$10.7 million in the operations phase.

#### **ECONOMIC IMPACT ON LEA UTILITIES**

This section reports the impact of economic development projects, the Zia Park Racino (ZIA) and National Enrichment Facility (NEF), on Lea County based utilities. Electricity and natural gas are provided by publicly regulated Investor Owned Utilities (IOUs). These companies plan their own capacity investment under the jurisdiction of the

NM Public Regulations Commission. It is assumed that both the electricity and natural gas utilities can expand operations and capital infrastructure to meet the growth in Lea County. This leaves the municipal utilities of water and waste-water. The major provider is the City of Hobbs Department of Utilities. This section assesses the impact of the economic developments projects on cost of service for providing water and waste water and the potential impact on rates.

To assess the impact of new economic activity from Zia and NEF, we employed cost of service (COS) and marginal impact analysis on the operations of the City of Hobbs Utilities Department. Data concerning this department (rates, capacity, expansion plans , O&M budget) were provided by Mr. Tim Woome, Director of the City of Hobbs Utilities department.

*Methodology:* The analysis assesses the marginal cost of providing addition capacity in treatment, pumping, storage and distribution. For example, additional residential water usage caused by economic growth will require additional wells, water rights, and treatment. Additional capacity for pumps and water rights is based on increased average volume. Storage is based on peak volume. Expansion of waste-water capacity is based on peak volume. Additional operations and maintenance costs are proportional to the expansion in total volume. The analysis assesses these costs then embeds the additional costs into cost of service of the current utility to derive the impact on rates.

Assessment of impacts on utilities is based on new household formations as indicated in Exhibit 4. Panel A indicates household formations that must be served during the NEF construction phase, a period over the next 8 years. These households are in

addition to the 0.8% increase in accounts for the water and waste-water facilities that are the historical growth rate in Hobbs. Thus the baseline analysis is the impact over and above what would occur without the economic projects. Two time periods are considered, 2010 and 2015, ten and fifteen years hence. The year 2010 would correspond to the middle of the construction phase and 2015 were corresponds to the operations phase.

NMSU Exhibit 7, 8 and 9 indicate the number of new accounts in residential commercial and other categories caused by the economic development projects. New household formation corresponds to NMSU Exhibit 4. Additional commercial and other accounts are proportional to the increase in new household accounts. The economic development projects increase the number of utility accounts between 17 to 22 percent in all categories.

NMSU Exhibit 10 projects additional water usage resulting from the increase in the number of accounts. Water use per account is assumed to remain constant. An additional 15 percent system distribution loss is factored into the usage amounts.

NMSU Exhibit 11 indicates current revenue by residential class. The city of Hobbs uses an increasing block rate structure for water to encourage water conservation. The effect of this is that the revenue based on revenue of average water use times the number of accounts will slightly understate total revenues. Thus the last column adjusts the customer class revenues by a 2 percent adjustment factor to account for the increasing block water rate effect.

NMSU Exhibit 12 estimates water utility revenues based on projected number of accounts and the adjusted revenue per account (NMSU Exhibit 11). The projections are for the baseline and each development scenario (Panel A and B; best, low and high).

NMSU Exhibit 13 indicates the impact of additional economic growth on the requirement that the City of Hobbs obtain additional water rights and well permits. From Exhibit 13, Hobbs has 20,064 acre feet of perfected water rights that is sufficient for it to cover foreseeable water requirements.

NMSU Exhibit 14 indicates additional well and storage capacity to accommodate economic growth. Well capacity is based on average daily production, currently about 6.8 mgd. The baseline scenario for 2015 and all other scenarios require some additional well capacity. For example under the high growth scenario in 2015, an additional 1.36 mgd in well capacity will be required. Additional storage capacity will also be required to maintain the ratio of 2 to 1 storage to production that is optimal for providing reserve during peak demand.

Based on estimates, additional well capacity costs \$139,000 per mgd. Storage capacity can either be above or below ground. The analysis uses an average cost of \$1050 per 1000g for storage. To assess cost of service impact for new capacity, the capital costs of new wells and storage is annualized. One technique is to estimate the equivalent annuity payment based on the expected life of the new capital and financing rates appropriate for a municipal utility. Wells are assumed to last 20 years. Storage tanks are assumed to last 30 years. Current municipal financing rates are approximately 5.5 percent.

NMSU Exhibit 15 indicates the cost impact of addition wells and storage capacity along with the increase in O&M costs, (O&M costs are assumed to increase in proportion to production). From the table, the maximum cost impact of the economic scenarios is approximately \$800,000 over current operating expenses for the water utility.

NMSU Exhibit 16 compares the additional costs associated with economic development versus additional revenues from new household and business formation. The third column indicates potential shortfalls in covering these costs. The deficits are a very small percentage of revenues indicating that water rates will require only a small adjustments (3 percent or less) over the next 10 years to accommodate the projected growth scenarios.

Exhibit 17 indicates the impact of the economic growth scenarios on waste-water capacity. The current waste-water facility is at maximum capacity, and there are plans for a \$15 to \$20 million expansion to plant capacity of 5.5 mgd. With the expansion, the City of Hobbs will have sufficient capacity to handle waste-water under all scenarios through by 2015. With the high growth estimate, however, the system will again be at capacity by 2015.

This expansion will need to be financed. Exhibit 18 compares the additional cost impacts of waste-water capacity associated economic growth against projected revenues, which also increase with economic growth. From the last column, current rates will not be sufficient to cover waste-water O&M and facility costs. Note, however, that more rapid growth decreases the rate increases needed. Under the baseline, rates will need to increase about 50 percent over the next 10 years. Under the high growth scenario, rates need to increase approximately 36 percent to cover the costs of expansion. The reason for lower rate increase is that economic development more fully utilizes waste-water capacity.

*Conclusion:* The economic development of Zia Park Racino and NEF projects will not adversely impact the provision of water services by the City of Hobbs Water

Utility. Additional wells and storage can be accommodated by very modest increases in water rates (less than 3 percent) over the next 10 years. No additional water rights are required. Waste-water is another issue. Here, the waste-water plant is now at capacity and there are current plans to increase capacity, even without the economic growth caused by Zia Park Racino and NEF. This expansion will involve considerable costs. A result of the analysis indicates that the increase economic growth associated with the ZIA and NEF will help ameliorate the costs of the plant by more fully utilizing the increased capacity. Waste-water rates will still increase but not to the same extent as without ZIA and NEF. In other words, everyone will pay more for utility service without these developments.

## **EXHIBITS**

<b>NMSU Exhibit 1 Economic Impact of Zia Park Racino</b>			
Revenue Generated per Year From Operations at Zia Park Racino		\$45,000,000	
Scenario	Best Estimate	Low Estimate	High Estimate
Percentage of Revenue Generated From Outside of Lea County	83.25%	70.00%	100.00%
Increase in Gross Receipts in Lea County	\$54,298,148	\$45,656,100	\$65,223,000
Increase in Lea County Household Earnings	\$20,222,258	\$17,003,700	\$24,291,000
Increase in Lea County Employment	1,196	1,006	1,437

Source: Authors' calculations using multipliers supplied by the U.S. Bureau of Economic Analysis ([www.bea.gov](http://www.bea.gov)).

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**NMSU Exhibit 2 Economic Impact of The National  
Enrichment Facility: Construction Phase**

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Revenue Generated per Year From Construction at NEF	\$48,615,000
Increase in Gross Receipts in Lea County	\$74,940,023
Increase in Lea County Household Earnings	\$26,713,943
Increase in Lea County Employment	971

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Source: Authors' calculations using multipliers supplied by the U.S. Bureau of Economic Analysis ([www.bea.gov](http://www.bea.gov)).

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**NMSU Exhibit 3 Economic Impact of The National  
Enrichment Facility: Operation Phase**

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Revenue Generated per Year From Operations at NEF	\$20,117,000
Increase in Gross Receipts in Lea County	\$40,409,018
Increase in Lea County Household Earnings	\$15,900,477
Increase in Lea County Employment	410

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Source: Authors' calculations using multipliers supplied by  
the U.S. Bureau of Economic Analysis ([www.bea.gov](http://www.bea.gov)).

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**NMSU Exhibit 4 Household Formations Arising Increased Economic Activity**

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Panel A Construction Phase			
	Best Estimate	Low Estimate	High Estimate
Households	1499	1367	1665
Population	3532	3183	3972
Student Enrollment	791	713	890
Panel B Operation Phase			
	Best Estimate	Low Estimate	High Estimate
Households	1111	979	1277
Population	2944	2594	3384
Student Enrollment	659	581	758

Source: Authors' calculations.

<b>NMSU Exhibit 5 Gross Receipts Tax Rates Lea County</b>				
<b>Locality</b>	<b>State</b>	<b>County</b>	<b>City</b>	<b>Total</b>
Eunice	5.0000	0.2500	1.4375	6.6875
Hobbs	5.0000	0.2500	1.4375	6.6875
Jal	5.0000	0.2500	1.4375	6.6875
Lovington	5.0000	0.2500	1.375	6.6250
Lovington Industrial Park	5.0000	0.3750	0.0000	5.3750
Tatum	5.0000	0.2500	1.4375	6.6875
Rest of County	5.0000	0.3750	0.0000	5.3750

Source: Gross Receipt Tax Schedule, New Mexico Taxation and Revenue Dept.

<b>NMSU Exhibit 6 Tax Revenues Arising from Increased Economic Activity</b>			
<b>Panel A Construction Phase</b>			
	Best Estimate	Low Estimate	High Estimate
Gross Receipts Taxes	\$6,300,361	\$5,879,061	\$6,832,947
Income Tax	\$1,267,277	\$1,180,376	\$1,377,133
Corporate Taxes	\$152,073	\$141,645	\$165,256
Property Taxes*			
Increase in Number of Residential Units	973	877	1,094
Increase in Residential Value	\$148,882,770	\$134,139,690	\$167,423,310
Increase in Residential Taxable Value	\$49,131,314	\$44,266,098	\$55,249,692
Increase in Residential Property Taxes	\$1,319,765	\$1,189,076	\$1,484,117
Increase in Non-residential Values	\$221,835,327	\$199,868,138	\$249,460,732
Increase in Non-residential Taxable Value	\$73,205,658	\$65,956,486	\$82,322,042
Increase in Non-residential Property Taxes	\$2,004,078	\$1,805,625	\$2,253,648
Lodger's Tax	\$11,252	\$10,352	\$12,031
<b>Total Taxes</b>	<b>\$10,902,734</b>	<b>\$10,064,490</b>	<b>\$11,959,877</b>
<b>Panel B Operation Phase</b>			
Gross Receipts Taxes	\$4,617,072	\$4,195,772	\$5,149,659
Income Taxes	\$975,335	\$888,434	\$1,085,191
Corporate Taxes	\$117,040	\$106,612	\$130,223
Property Taxes			
Increase in Number of Residential Units	811	715	1,277
Increase in Residential Value	\$124,083,000	\$109,395,000	\$195,381,000
Increase in Residential Taxable Value	\$40,947,390	\$36,100,350	\$64,475,730
Increase in Residential Property Taxes	\$1,099,929	\$969,728	\$1,731,947
Increase in Non-residential Value	\$184,883,670	\$162,998,550	\$291,117,690
Increase in Non-residential Taxable Value	\$61,011,611	\$53,789,522	\$96,068,838
Increase in Non-residential Property Taxes	\$1,670,254	\$1,472,542	\$2,629,981
Lodger's Taxes	\$8,130	\$7,388	\$9,067
<b>Total Taxes</b>	<b>\$8,487,760</b>	<b>\$7,640,476</b>	<b>\$10,736,068</b>

Source: Authors calculations

NMSU Exhibit 7 Projection of Residential Households on Utility System by Scenario							
	Current	Additional	2010		Additional	2015	
		Households	Total	Percent	Households	Total	Percent
		Construction Phase	Households	Increase	Operations Phase	Households	Increase
Baseline	9,200	0	9,574	4.1%	0	9,963	8.3%
Best	9,200	1,333	10,907	18.6%	1,111	11,074	20.4%
Low	9,200	1,201	10,775	17.1%	979	10,942	18.9%
High	9,200	1,499	11,073	20.4%	1,277	11,240	22.2%

Source: Tim Woomer, Director of Hobbs, NM Utilities

NMSU Exhibit 8: Projection of Commercial Establishments on Utility System by Scenario							
	Current	Additional	2010		Additional	2015	
		Commercial	Total	Percent	Commercial	Total	Percent
		Construction Phase	Establishments	Increase	Operations Phase	Establishments	Establishments
Baseline	1,600	0	1,665	4.1%	0	1,733	8.3%
Best	1,600	232	1,897	18.6%	193	1,926	20.4%
Low	1,600	209	1,874	17.1%	170	1,903	18.9%
High	1,600	261	1,926	20.4%	222	1,955	22.2%

Source: Tim Woomer, Director of Hobbs, NM Utilities

NMSU Exhibit 9: Projection of Other Accounts by Scenario							
	Current	Additional	2010		Additional	2015	
		Other Accounts	Total	Percent	Other Accounts	Total	Percent
		Construction Phase	Establishments	Increase	Operations Phase	Establishments	Establishments
Baseline	500	0	520	4.1%	0	541	8.3%
Best	500	72	593	18.6%	60	602	20.4%
Low	500	65	586	17.1%	53	595	18.9%
High	500	81	602	20.4%	69	611	22.2%

Source: Tim Woomer, Director of Hobbs, NM Utilities

NMSU Exhibit 10: Projection of Residential, Commercial, Other and Total System Water Use (Annual Use) by Scenario

		Residential Use			Commercial Use			Other Use			System Total Usage (000g) 1/
		Number of Accounts	Usage per Account	Total Usage (000g)	Number of Accounts	Usage per Account	Total Usage (000g)	Number of Accounts	Usage per Account	Total Usage (000g)	
Current	2005	9,200	126,000	1,159,200	1,600	362,400	579,840	500	861,600	430,800	2,495,316
Baseline	2010	9,574	126,000	1,206,316	1,665	362,400	603,408	520	861,600	448,310	2,596,738
	2015	9,963	126,000	1,255,347	1,733	362,400	627,933	541	861,600	466,532	2,702,283
Best	2010	10,907	126,000	1,374,274	1,897	362,400	687,421	593	861,600	510,729	2,958,288
	2015	11,074	126,000	1,395,333	1,926	362,400	697,955	602	861,600	518,555	3,003,620
Low	2010	10,775	126,000	1,357,642	1,874	362,400	679,102	586	861,600	504,548	2,922,486
	2015	10,942	126,000	1,378,701	1,903	362,400	689,636	595	861,600	512,374	2,967,817
High	2010	11,073	126,000	1,395,190	1,926	362,400	697,884	602	861,600	518,502	3,003,312
	2015	11,240	126,000	1,416,249	1,955	362,400	708,418	611	861,600	526,328	3,048,644

1/ Includes a 15% loss factor

Source: Tim Woomer, Director of Hobbs, NM Utilities

NMSU Exhibit 11: Current Revenue per Account and System Water Revenue by Customer Class							
	Meter	Average	Revenue		Total	Adjusted	Adjusted
	Size	Consumption	per Month	Annual	Revenue	Annual Revenue	Account Revenue
Residential	0.625	10.5	\$ 15.05	\$ 180.59	\$ 1,661,399	\$ 1,701,042	\$ 184.90
Commercial	1.5	30.2	\$ 42.44	\$ 509.27	\$ 814,825	\$ 834,268	\$ 521.42
Other	2	71.8	\$ 101.69	\$ 1,220.26	\$ 610,132	\$ 624,691	\$ 1,249.38
					\$ 3,086,356	\$ 3,160,000	
Water revenue					\$ 3,160,000		
Increasing block rate effect					\$ 73,644		
Percent over average consumption revenue (adjustment factor)						2%	

Source: Tim Woomer, Director of Hobbs, NM Utilities

NMSU Exhibit 12: Water Revenue Projection by Customer Class for Alternative Scenarios											
	<u>Year</u>	<u>Number of</u> <u>Accounts</u>	<u>Revenue</u> <u>per Account</u>	<u>Total</u> <u>Revenue</u>	<u>Number of</u> <u>Accounts</u>	<u>Revenue</u> <u>per Account</u>	<u>Total</u> <u>Revenue</u>	<u>Number of</u> <u>Accounts</u>	<u>Revenue</u> <u>per Account</u>	<u>Total</u> <u>Revenue</u>	<u>Total</u> <u>Revenue 1/</u>
Current	2005	9,200	\$ 184.90	\$ 1,701,042	1,600	\$ 521.42	\$ 834,268	500	\$ 1,249.38	\$ 624,691	3,160,000
Baseline	2010	9,574	\$ 184.90	\$ 1,770,181	1,665	\$ 521.42	\$ 868,177	520	\$ 1,249.38	\$ 650,081	3,288,439
	2015	9,963	\$ 184.90	\$ 1,842,130	1,733	\$ 521.42	\$ 903,464	541	\$ 1,249.38	\$ 676,504	3,422,098
Best	2010	10,907	\$ 184.90	\$ 2,016,647	1,897	\$ 521.42	\$ 989,055	593	\$ 1,249.38	\$ 740,594	3,746,295
	2015	11,074	\$ 184.90	\$ 2,047,549	1,926	\$ 521.42	\$ 1,004,211	602	\$ 1,249.38	\$ 751,942	3,803,702
Low	2010	10,775	\$ 184.90	\$ 1,992,241	1,874	\$ 521.42	\$ 977,085	586	\$ 1,249.38	\$ 731,631	3,700,956
	2015	10,942	\$ 184.90	\$ 2,023,143	1,903	\$ 521.42	\$ 992,241	595	\$ 1,249.38	\$ 742,979	3,758,363
High	2010	11,073	\$ 184.90	\$ 2,047,340	1,926	\$ 521.42	\$ 1,004,108	602	\$ 1,249.38	\$ 751,865	3,803,313
	2015	11,240	\$ 184.90	\$ 2,078,242	1,955	\$ 521.42	\$ 1,019,264	611	\$ 1,249.38	\$ 763,214	3,860,719

Source: Tim Woomer, Director of Hobbs, NM Utilities

NMSU Exhibit 13. Water rights: Current capacity and required new capacity						
		Annual Use		Capacity	Reserve	Additional
		000g	ac ft.	ac. ft.		Water Rights Required (aft)
Current	2005	2,495,316	7682	20,064	12,382	0
Baseline	2010	2,596,738	7994	20,064	12,070	0
	2015	2,702,283	8319	20,064	11,745	0
Best	2010	2,958,288	9107	20,064	10,957	0
	2015	3,003,620	9246	20,064	10,818	0
Low	2010	2,922,486	8997	20,064	11,067	0
	2015	2,967,817	9136	20,064	10,928	0
High	2010	3,003,312	9246	20,064	10,818	0
	2015	3,048,644	9385	20,064	10,679	0

Source: Tim Woomer, Director of Hobbs, NM Utilities

NMSU Exhibit 14. Water production and storage: Current capacity and required new capacity									
		Average Annual (000g)	Daily (mgd)	Peak to Average factor	Peak (mgd)	Pumping Capacity	Reserve %	Additional Pumping capacity (mgd) Needed 1/	Additional Storage (g) Needed /2
Current	2005	2,500,000	6.8	2.3	16.0	7.83	14%	0	0
Baseline	2010	2,596,738	7.1	2.3	16.6	7.83	10%	0.00	530,074
	2015	2,702,283	7.4	2.3	17.3	7.83	6%	0.31	1,108,401
Best	2010	2,958,288	8.1	2.3	18.9	7.83	-3%	1.08	2,511,167
	2015	3,003,620	8.2	2.3	19.2	7.83	-5%	1.22	2,759,561
Low	2010	2,922,486	8.0	2.3	18.7	7.83	-2%	0.98	2,314,990
	2015	2,967,817	8.1	2.3	19.0	7.83	-4%	1.11	2,563,383
High	2010	3,003,312	8.2	2.3	19.2	7.83	-5%	1.22	2,757,875
	2015	3,048,644	8.4	2.3	19.5	7.83	-6%	1.36	3,006,268

Source: Tim Woomer, Director of Hobbs, NM Utilities

- 1/ Pumping is based on average daily production with a 10% reserve
- 2/ Storage is based on 2 to 1 storage to daily production (current storage is adequate)

NMSU Exhibit 15: Cost Impact on the Water System of Economic Scenarios												
	Year	Average Annual (000g)	O&M \$/year	Additional O&M \$/year	Additional Pumping capacity (mgd) Needed	Additional Pumping Capital Costs	Additional Pumping Costs (annualized)	Additional Storage Needed /2	Additional Storage Capital Costs	Additional Storage Costs (annualized)	Total Additional Annual Costs	
Current	2005	2,500,000	\$ 2,620,000	\$ -	0.00	\$ -	\$ -	0.00	\$ -	\$ -	\$ -	
Baseline	2010	2,596,738	\$ 2,721,382	\$ 101,382	0.00	\$ -	\$ -	530,074	\$556,577	\$ 38,296	\$ 139,677	
	2015	2,702,283	\$ 2,831,993	\$ 211,993	0.31	\$ 43,348.40	\$ 3,627.37	1,108,401	\$1,163,822	\$ 80,077	\$ 295,697	
Best	2010	2,958,288	\$ 3,100,286	\$ 480,286	1.08	\$ 150,504.13	\$ 12,594.09	2,511,167	\$2,636,726	\$ 181,421	\$ 674,301	
	2015	3,003,620	\$ 3,147,794	\$ 527,794	1.22	\$ 169,478.61	\$ 14,181.86	2,759,561	\$2,897,539	\$ 199,366	\$ 741,342	
Low	2010	2,922,486	\$ 3,062,765	\$ 442,765	0.98	\$ 135,518.37	\$ 11,340.09	2,314,990	\$2,430,740	\$ 167,248	\$ 621,353	
	2015	2,967,817	\$ 3,110,273	\$ 490,273	1.11	\$ 154,492.84	\$ 12,927.86	2,563,383	\$2,691,552	\$ 185,193	\$ 688,394	
High	2010	3,003,312	\$ 3,147,471	\$ 527,471	1.22	\$ 169,349.87	\$ 14,171.08	2,757,875	\$2,895,769	\$ 199,245	\$ 740,887	
	2015	3,048,644	\$ 3,194,979	\$ 574,979	1.36	\$ 188,324.34	\$ 15,758.85	3,006,268	\$3,156,582	\$ 217,190	\$ 807,928	

1/ Pumping is based on average daily production.

2/ Storage is based on 2 to 1 storage to daily production (current storage is adequate)

Source: Tim Woomeer, Director of Hobbs, NM Utilities

NMSU Exhibit 16: Comparison of Additional Revenue versus Costs and Impact on Revenues						
	Year	Additional revenues	Additional Costs	Deficit	% of Revenues 1/	
Current	2005	\$ -	\$ -	\$ -	0%	
Baseline	2010	\$ 128,439	\$ 139,677	\$ 11,239	0.3%	
	2015	\$ 262,098	\$ 295,697	\$ 33,600	1.0%	
Best	2010	\$ 586,295	\$ 674,301	\$ 88,006	2.3%	
	2015	\$ 643,702	\$ 741,342	\$ 97,640	2.6%	
Low	2010	\$ 540,956	\$ 621,353	\$ 80,397	2.2%	
	2015	\$ 598,363	\$ 688,394	\$ 90,031	2.4%	
High	2010	\$ 643,313	\$ 740,887	\$ 97,574	2.6%	
	2015	\$ 700,719	\$ 807,928	\$ 107,208	2.8%	

1/ Potential Base rate increases

Source: Tim Woomeer, Director of Hobbs, NM Utilities

NMSU Exhibit 17: Impact of Economic Development on Waste-water Capacity, Current and Planned									
	Year	Water System		Waste-water System		Current Capacity	Capacity with planned Addition	% Reserve with Current capacity	% Reserve with Planned capacity
		Average	Peak	Average	Peak				
Current	2005	6.8	16.0	2.9	4.5	3.0	5.5	0%	18%
Baseline	2010	7.1	16.6	3.0	4.7	3.0	5.5	0%	15%
	2015	7.4	17.3	3.1	4.9	3.0	5.5	0%	12%
Best	2010	8.1	18.9	3.4	5.3	3.0	5.5	0%	3%
	2015	8.2	19.2	3.5	5.4	3.0	5.5	0%	2%
Low	2010	8.0	18.7	3.4	5.3	3.0	5.5	0%	4%
	2015	8.1	19.0	3.4	5.3	3.0	5.5	0%	3%
High	2010	8.2	19.2	3.5	5.4	3.0	5.5	0%	2%
	2015	8.4	19.5	3.5	5.5	3.0	5.5	0%	0%

Source: Tim Woomer, Director of Hobbs, NM Utilities

NMSU Exhibit 18: Impact of Alternative Scenarios on Waste water Financial operations and Additional Rate Adjustments									
	Year	Average Inflow	Annual O&M \$/year	Current Capital Payments	Planned Expansion payments	Total Costs	Projected Revenue at Current rates	Deficit	% rate Increase
Current	2005	2.88	\$ 715,800	\$ 1,624,200	\$ -	\$ 2,340,000	\$ 2,340,000	\$ -	
Baseline	2010	2.99	\$ 743,498	\$ 1,624,200	\$ 1,376,108	\$ 3,743,806	\$ 2,430,547	\$ 1,313,259	54.0%
	2015	3.11	\$ 773,718	\$ 1,624,200	\$ 1,376,108	\$ 3,774,026	\$ 2,529,337	\$ 1,244,688	49.2%
Best	2010	3.41	\$ 847,017	\$ 1,624,200	\$ 1,376,108	\$ 3,847,325	\$ 2,768,958	\$ 1,078,367	38.9%
	2015	3.46	\$ 859,996	\$ 1,624,200	\$ 1,376,108	\$ 3,860,304	\$ 2,811,388	\$ 1,048,916	37.3%
Low	2010	3.37	\$ 836,766	\$ 1,624,200	\$ 1,376,108	\$ 3,837,074	\$ 2,735,447	\$ 1,101,627	40.3%
	2015	3.42	\$ 849,745	\$ 1,624,200	\$ 1,376,108	\$ 3,850,053	\$ 2,777,877	\$ 1,072,176	38.6%
High	2010	3.46	\$ 859,908	\$ 1,624,200	\$ 1,376,108	\$ 3,860,216	\$ 2,811,100	\$ 1,049,116	37.3%
	2015	3.51	\$ 872,888	\$ 1,624,200	\$ 1,376,108	\$ 3,873,196	\$ 2,853,531	\$ 1,019,665	35.7%

Source: Tim Woomer, Director of Hobbs, NM Utilities

## **APPENDIX: RESEARCHERS' VITAE**

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**Education**

Ph.D., Arizona State University, Economics, 1989

B.S., Willamette University, Economics, 1980

**Professional Experience**

Associate Professor, Department of Economics and International Business, College of Business Administration and Economics, New Mexico State University, Las Cruces, NM. 1987-Present.

Visiting Professor, National Chung Hsing University, Taichung, Taiwan, Summer 2004. Taught graduate money and banking

Visiting Professor, Instituto Tecnológico y Estudios Superiores de Monterrey, Juárez, Chihuahua, Mexico, Fall 2003. Taught graduate business economics.

Visiting Professor, NIRMA Institute of Management, Ahmedabad, Gujarat, India, Fall 2000. Taught graduate money and banking course.

**Awards and Honors**

Contributor: Western Blue Chip Indicators, 1991-Present

Advisor of the Year, Golden Key Southwest Region, 1993

Finalist for the Patricia Christmore Faculty Teaching Award: New Mexico State University, 1992

CB&E Council Teacher of the Year: College of Business and Economics, 1991-1992

Faculty Dissertation Support Scholarship: Arizona State University, 1987

Barchilon Scholarship (Best Graduate Student in Economics): Arizona State University, 1987

Regents Scholarship: Arizona State University, 1986-1987

Albina Page Scholarship: Willamette University, 1976-1980

### **Funded Research**

Principal Investigator, "Economic Impact of New Mexico Air Force Bases," NMSU Proposal, Funded by New Mexico Military Base Commission, Amount: \$10,000, November 2002-April 2003.

Investigator, "Border + 20 Project," NMSU Proposal, Funded by SCERP/EPA, Amount: \$22,000, August 2003-Present.

Investigator, "Border +20 Project," NMSU Proposal, Funded by SCERP/EPA, Amount: \$45,000, August 2002-August 2003.

Principal Investigator, "Border Air Emission Trading," NMSU Proposal, Funded by SCERP/EPA, Amount: \$233,000, February 2001-August 2002

Investigator, "Alternative Utilization of Agricultural Lands Using Low-Water Native Plants," NMSU Proposal, Funded by SCERP/EPA, Amount: \$99,000, June 2001-December 2002

Investigator, "Cooperative for the Growing of Short Fiber," NMSU Proposal, Funded by International Arid Lands Association, Amount: \$72,444, July 1, 1997 to June 30, 1998

Investigator, "Pilot Study for an Integrated Waste Treatment and Disposal System Along the U.S. Border: Ojinaga Community as a Prototype (2nd Year)," NMSU Proposal Number 970686, Funded by SCERP/EPA, Amount: \$92,854. July 1997 to June 1998

Investigator, "Pilot Study for an Integrated Waste Treatment and Disposal System Along the U.S. Border: Ojinaga Community as a Prototype (1st year)," NMSU Proposal Number 960686, Funded by SCERP/EPA, Amount: \$92,391, July 1996 to June 1997

Principal Investigator, "Title Insurance Rate Hearing," NMSU Proposal, Funded by New Mexico Insurance Department, Amount: \$10,000, July 1995-June 1996

### **Publications**

#### *Refereed Journal Articles*

"Japanese Financial Reform and East Asia," *Thammasat Economic Journal*, December 2003.

With Concepción Luján, Constance Falk, John Mexal, and H. Lujan Alvarez, "Desarrollo Agroforestal Comunitario Sostenible en la Region Fronteriza

- Mexico-Estados Unidos de America,” *Ciencia Forestal* 26:81-91. January 2001.
- With Constance Falk, John Mexal, and Concepción Luján, “Development of a Commercial Community Forestry Project in a Mexican Border Town,” *Arid Lands Journal*, December 1999, pp. 36-45.
- With Amber Vallotton et al, “Using Trees for Wastewater Treatment: A Pilot Study in Ojinaga, Mexico,” *New Mexico Journal of Science*, December 1997.
- With Soumendra Ghosh and Carl Enomoto, “Revenue-Stabilizing Tax Rates over the Business Cycle,” *Quarterly Journal of Business and Economics*, 1992, 31(3): 84-97.
- “Chaos, Coffee Cups and Butterflies: Implications for Financial Investment,” *New Mexico Business Forum*, Spring 1989, pp. 3-6.

#### *Book Chapters*

- “China, Maquilas Employment and the WTO: An Investigation” *Pan-Pacific Business Conference*, XX, Shanghai, China, 2003, ISBN: 1-931649-19-7.
- “Use of the Internet in Global Marketing: Business to Person Strategies for Small and Medium Enterprises,” *Proceedings of NICOM 2003*, Nirma Institute of Management, January 2003.
- With David Eaton, “Border Finances: Paying for Environmental Infrastructure,” in Paul Ganster (ed.), *The U.S.-Mexican Border Environment: Border Environmental Infrastructure: Now to 2020*, SCERP Monograph Series, No. 3. San Diego: Southwest Center for Environmental Research and Policy, 2001.
- With Amber Vallotton, et al., “Sustainable Use of Waste Water for Small Communities: A Model System for Short Rotation Woody Crop Production,” in Paul Westerhoff (ed.), *The U.S.-Mexican Border Environment: Water Issues Along the U.S.-Mexican Border*, SCERP Monograph Series, No. 2. San Diego: Southwest Center for Environmental Research and Policy, 2000.
- With Elliott Willman, "International Lending and Sovereign Debt in the Presence of Agency Costs: The Case of Mexico," Dilip K. Ghosh and Edgar Ortiz (eds.), *The Changing Environment of International Financial Markets: Issues and Analysis*, 1994, pp. 139-146.
- "Commodity Market Folklore: The 'Permanent' Value of the Gold-Oil Price Ratio," *International Trade and Finance in A Rapidly Changing Environment*, 1992, pp. 297-316.

With Mark Hagerty, "Macroeconomic Implications of U.S. Sanctions on Panama," *Proceedings of the 37th Annual Conference of the Rocky Mountain Council of Latin American Scholars*, 1989, pp. 38-44.

"Banking and Finance," in Stacy Lee (ed.), *The United States and Mexico*, London: Brown Partworks, 2000.

"NADBank," in Stacy Lee (ed.), *The United States and Mexico*, London: Brown Partworks, 2000.

"Indicators, Economic," in Frank N. Magill (ed.) *Magill Survey of Social Sciences: Economics*, Pasadena, CA: Salem Press, 1991, pp. 922-927.

"GNP, Actual and Potential," in Frank N. Magill (ed.) *Magill Survey of Social Sciences: Economics*, Pasadena, CA: Salem Press, 1991, pp. 1041-1046.

"Unemployment Fluctuations," in Frank N. Magill (ed.) *Magill Survey of Social Sciences: Economics*, Pasadena, CA: Salem Press, 1991, pp. 2362-2367.

#### *Scholarly Monographs and Textbooks*

With Elliott Willman, *Workbook to Accompany Money, Banking and the Financial System by R. Glen Hubbard, 2nd ed.*, Addison-Wesley, 1997.

With Erin Ross and Arnold Maltz, *Partnerships for Progress: Trade Along the U.S.-Mexico Border*, Background Report for the New Mexico First Town Hall on Regional Trade, Albuquerque NM, 1995.

With R Bruce Billings, Richard T. Newcomb and Deborah J. Shields, *Current Regional Issues: Arizona, Colorado, Nevada, New Mexico and Utah*, New York: The Dryden Press, 1994.

#### *Technical Reports*

*Economic Impact of Reduced Operations at Ruidoso Downs Race Track and Casino Arising from the Establishment of a Race Track in Hobbs, New Mexico, on the Economy of Lincoln County, New Mexico*, prepared for Ruidoso Downs, Inc., October 2003.

*The New Mexico Title Insurance Industry: Current Conditions and Forecasts*, prepared for the New Mexico Department of Insurance annually, Fall 1994-2000.

*The Texas Title Insurance Industry*, prepared for the Office of the Public Insurance Commission, Spring 1997.

With Lay James Gibson and James T. Peach, "Impact of Peso Devaluation on Arizona Border Economics," Technical Report prepared for the United States Economic Development Agency, 1990.

*Book Reviews*

“Review of *Linking or Isolating Economies? A Look at Trucking along the Texas-Mexico Border*: David J Molina and James R. Giermanski, Austin, TX: The University of Texas at Austin, 1995,” *Journal of Borderland Studies*, Fall 1996.

“Review of *The U.S.-Mexico Series*: Tom Barry with Harry Browne and Beth Sims, *The Challenge of Cross-Border Environmentalism: The U.S. Mexico Case*,” Albuquerque: Resource Center Press, 1994; Beth Sims with Tom Barry, *On Foreign Soil: Government Programs in U.S.-Mexico Relations*, Albuquerque: Resource Center Press, 1994; Tom Barry with Harry Browne and Beth Sims, *Crossing the Line: Immigrants, Economic Integration, and Drug Enforcement on the U.S.-Mexico Border*, Albuquerque: Resource Center Press, 1994; and Tom Barry with Harry Browne and Beth Sims, *For Richer or Poorer: Shaping U.S.-Mexican Integration*, Albuquerque: Resource Center Press, 1994,” *Journal of Borderland Studies*, Fall, 1994.

"Two Views of Nafta: Reviews of Ross Perot with Pat Choate, *Save Your Job, Save Our Country*, New York: Hyperion, 1993; and Gary Clyde Hufbauer and Jeffrey J. Schott, *Nafta: An Assessment*, Washington: Institute for International Economics, 1993," *Journal of Borderland Studies*, Winter, 1993.

*Trade Publications*

“Foreign Trade Continues to Affect Outlook for New Mexico,” Various New Papers throughout New Mexico, January-March 1999.

"New Mexico is Far Behind Other States in Trade with Mexico," *Business Journal*, May 1995.

"U.S.-Mexico Border Retailers May Feel the Pinch," *Business Journal*, April 1995.

"Economic Outlook", *New Mexico Business Journal*, March 1995.

"Trade with Mexico: An Unfulfilled Promise," *New Mexico Business Journal*, January 1994.

"The New Mexico Economy," appearing quarterly in the *Business Forecaster*, 1992-1994.

"The New Mexico Economy," appearing quarterly in the *Economy Watch*, 1992-1994.

**Presentations at Professional Meetings**

“The Asian Financial Crisis, Entrepreneurship, and the Prudential Regulation of Banks: The Case of Thailand,” presented to the *Conference on Small and Medium Enterprises in the Global Economy*, June 2000.

With Connie Falk and Concepción Lujan Alvarez, "Development of a Commercial Community Forestry Project in a Mexican Border Town," presented to the *Western Social Sciences Association*, April 1999.

With John Mexal, et al., "Fiber Production and Wastewater Treatment Along the U.S.-Mexican Border: Results from a Pilot Study in Ojinaga, Mexico," presented to the *Association of Borderland Scholars*, December 1998.

"The Impact of the Peso Devaluation: Evidence from the States," presented to the *Rocky Mountain Council of Latin American Scholars*, March 1996.

With Soumendra Ghosh, "Measuring Efficiency in the Presence of Contract Interlinkage: Evidence from Rural India" to be presented at the Southern Economic Meeting, November 1991.

With Herbert Kaufman, "Is There a Distinction between Fundamental and Speculative Bank Runs?" presented at the Western Economic Association International Meeting, July 1991.

With James Peach and Lay James Gibson, "Peso Devaluation and Economic Instability in the U.S.-Mexican Borderlands," presented at Geographical Association Meeting, April 1990.

With Carl Enomoto and Soumendra Ghosh, "Optimal Tax Time Path in State Economies" presented at the Western Regional Sciences Association Meeting, February 1990.

With Soumendra Ghosh, "Monitoring Costs, Transaction Interlinkage and the Selection of Optimal Financial Contracts: Evidence from Rural India," presented at the Southern Economic Association Meeting, November 1989.

With Herbert Kaufman, "Bank Capital in the Absence of Deposit Rate Ceilings: The Implications for Banking System Stability," invited paper presented at the Southern Economic Association Meeting, November 1988.

### **Presentations Before Business and Professional Groups**

"New Mexico in 2003 and Beyond," presented to *Sunrise Lions Club of Las Cruces*, November 2003.

"New Mexico in 2003 and Beyond," presented to the Las Cruces Chapter of the *National Association of Financial Advisors*, October 2003.

"The New Mexico and West Texas Economy," presented to the Board of Directors of *State National Bank*, April 2003.

- “Economics of the Border Environment,” presented to the Kiwanas of Las Cruces, April 2003.
- “Emission Trading on the U.S.-Mexican Border,” briefing presented to Officials of SERANAT, and Comisión Nacional de Agua, Mexico City, Mexico, February 2003.
- “Current Conditions in Banking: Outlook for the Macroeconomy,” presented to the *Conference of State Bank Regulators*, Telephone Conference, March 2002.
- “New Economy, Old Economy and Alan Greenspan: Outlook for the Macroeconomy,” presented to the *Conference of State Bank Regulators*, Albuquerque, NM, March 2000.
- “Integrated Waste Water Treatment and Short Fiber Production,” presented to staff of *North American Development Bank*, San Antonio, TX, February 1999.
- “Integrated Waste Water Treatment and Short Fiber Production,” Keynote speech before the *Border Institute*, Nogales, AZ, December 1998.
- “Diplomato: The Global Economy,” Instituto Tecnológico y De Estudios Superiores de Monterrey, Juarez Mexico, September 1998.
- “The Asian Crisis,” presented to the *Oregon Small Timber Owners Association*, Kelso, Washington, April 24, 1998.
- “A Sustainable Wastewater Treatment Plan for the Ojinaga Community,” presented to *Junta Central de Agua y Saneamiento del Estado*, Chihuahua, Mexico, February 1998.
- “Using Macroeconomics,” presented to the *National Association of Purchasing Management*, Southern New Mexico Affiliate, Las Cruces, New Mexico, May 9, 1997.
- “Nafta,” Economic Development Agency Meeting, Santa Fe, New Mexico, May 15, 1996.
- “Economic Forecasting Methods,” presented to the *National Association of Purchasing Management*, Southern New Mexico Affiliate, Las Cruces, New Mexico, May 8, 1996.
- “The Mexican Peso Crisis,” Border Research Center, New Mexico State University, August 1, 1995. Sponsored by the *National Geographic Society*.

**Expert Testimony**

Before the New Mexico Corporation Commission, *Title Insurance Rate Setting Hearing*, Santa Fe, NM. Annually, 1994-2000.

Before the Texas Insurance Commission, *Title Insurance Rate Setting Hearing*, Austin, TX. Biannually, 1997.

## VITA

Name and Address

J. Thomas McGuckin, 4751 Quail Run, Las Cruces, NM 88001, Tel. 505-521-7352 (Office)

Educational Background

Ph.D., 1980, University of Wisconsin - Madison, Major in Agricultural Economics with field emphasis on production, operations research and natural resource economics.

M.S., 1976, Colorado State University, Major in Economics

B.A., 1973, Pomona College - California, Major in Economics, Minor in Physics

Present Position

Associate Professor of Economics, Department of Economics, New Mexico State University, August 1989 to present.

## PUBLICATIONS

*Journal Articles*

1. "Market Exchange Impact on Water Supply Planning with Water Quality" with Messile Ejeta and Larry Mays, **ASCE Journal of Water Resources and Management**, (forthcoming 2004).
2. "Evaluating Consumer Response to Non-price Water Conservation Programs", with Michelsen, A.M., and D.M. Stumpf, " **Journal of the American Water Resources Association**. Special issue on Human Dimensions in Watershed Management, (July 1999)
3. "Emerging Agricultural Water Conservation Price Incentives." With Michelsen, A.M., R.G. Taylor, and R.Huffaker. **Journal of Agricultural and Resource Economics**. 24(1). 24 pp. (July 1999)
4. "Evaluating the Effectiveness of Conservation Water-Pricing Programs: Reply", with Huffaker, R., N. Whittlesey, A.M. Michelsen, and G.Taylor, **Journal of Agricultural and Resource Economics**. 23(2). (December 1998)
5. "Effectiveness of Conservation Policies on New Mexico Residential Water Demand", with Gegax, D and A.M. Michelsen, ", **New Mexico Journal of Science**. 1998. Vol. 38:104-126.
6. "Evaluating the Effectiveness of Conservation Water-Pricing Programs, with Huffaker, R., N. Whittlesey, A.M. Michelsen, and G.Taylor," **Journal of Agricultural and Resource Economics**. 1998. 23(1):12-19.
7. "Technical Efficiency, Risk Attitude and Adoption of New Technology: The Case of the U.S. Dairy Industry"; with Soumen Ghosh and Subal Kumbhakar; **Technological Forecasting and Social Change: An International Journal**, Summer 1994.
8. "Substitution Effects in CVM Values" **American Journal of Agriculatural Economics**, with Ronald Cummings and Phil Ganderton, Vol 75:2, 84-98, 1994.
9. "Hypothetical Surveys and Real Economic Commitments", **Land Economics**, with Helen Neill, Ronald Cummings, Phillip Ganderton, and Glenn Harrison, Vol 70:2, May 1994.
10. "Assessing Risk Costs For HAZMAT Waste Transportation", **Radioactive Waste Management and the Nuclear Fuel cycle, An International Journal**, with Phil Ganderton, Vol 17:3, Dec 1993.
11. "Water Conservation in Irrigated Agriculture: A Stochastic Production Frontier Model", **Water Resources Research** , with Noel Gollehon and Soumen Ghosh ,Vol. 28:2 305-312, 1992.
12. "A Generalized Production Frontier Approach for Estimating Determinants of Inefficiency in U.S. Dairy Farms", **Journal of Business & Economic Statistics**, with Subal Kumbhakar, and Soumendra Ghosh, Vol. 9:3, 279-286, 1991.

13. "Biotechnology, Potential Productivity and U.S. Dairy Policy", **North Central Journal of Agricultural Economics**, with Soumen Ghosh Vol. 11:2, 1989.
14. "Impact of the Tax Reform Act of 1986 on a Cross Section of U.S. Dairy Farms", **North Central Journal of Agricultural Economics**, with G. Welsh, R. Glinnman, and G. Bruner, Vol. 10:2, 192 - 208, 1988.
15. "Optimal Control of Irrigation Scheduling using a Random Time Frame". **American Journal of Agricultural Economics**, with C. L. Mapel, R. R. Lansford, and T. Sammis, Vol. 69:1, 76-85, 1987.
16. "Evapotranspiration Crop Coefficients Predicted Using Growing-Degree-Days", **Transactions of the American Society of Agricultural Engineers**, with Ted Sammis, Craig Mapel, D.G. Lugg, and R.R. Lansford Vol. 28:3 773-779, 1985.
17. "Irrigation Scheduling Models: An Economic Analysis", **Journal of Farm Managers and Rural Appraisers**, with Lansford, Robert R., Craig L. Mapel, and Theodore Sammis, Vol. 48:3 31-37 1984.
18. "Wet Fractionation System: An Economic Analysis", **Transactions of The American Society of Agricultural Engineers**, with Richard Shoney and Richard Koegel, Vol. 51: 1400-1403, 1983.
19. "The Economics of the Wet Fractionation System", **American Journal of Agricultural Economics**, with Ricard Shoney, Vol. 65:1 38-44, 1983.
20. "On the Economics of Desalination of Brackish Household Water Supplies", **Journal of Environmental Economics and Management**, with Robert Young, Vol. 8: 79-91, 1981.
21. "Alfalfa Management Strategies for a Wisconsin Dairy Farm, An Application of Stochastic Dominance", **North Central Journal of Agricultural Economics**, Vol. 5:1, 1981.

#### Books, Chapters, Monographs and Special Reports

1. Cost of Service Analysis for Water, Wastewater, Natural Gas and Solid Waste, Final Report to the City of Las Cruces, with Doug Gegax, October 2003
2. Water Management Improvements for New Mexico, Report to the NM Legislature by the Rio Grande Heritage, with Denise Fort, May 2003.
3. An Analysis of Electrical Deregulation and Its Effects on Consumers: Why New Mexico's Electric Utility Restructuring Act Should be Repealed, Report to the New Mexico Attorney General's Office, with Doug Gegax, December 2002.
4. The Economic and Environmental Consequences of an International Water Market in the Paso del Norte Region that includes Ciudad Juarez, Final Report to SCERP, with Maria Teresa Gonzales; November 2003
5. Economic Analysis of Improved Water Quality in the Rio Grande Project; Final Report to Southwest Consortium for Environmental Research and Policy, November 2002
6. Water Management Study: Upper Rio Grande River Basin, a report to the Western Water Policy Review Advisory Commission, with Ernie Niemi, ECONorthwest, 1997;
7. Economic Impact of Designation for the Rio Grande Silvery Minnow, a report to the U. S. Fish and Wildlife Service, with Ernie Niemi, ECONorthwest 1996;
8. Water Exchange in the Rio Grande Project, Solution to the Future, a report to the Economic Development Agency, Department of Commerce, with Donna Stumpf, 1997.
9. Effectiveness of Residential Water Conservation Price and Non-price Programs, report published by the American Water Works Association (in press), with Ari Michelson and Donna Stumpf, 1997.

10. Incentive Pricing Handbook for Agricultural Water Districts, published by U.S. Bureau of Reclamation, with Hydrosphere Inc. 1997.
11. Achieving Efficient Water Management, A Guidebook for Preparing Agricultural Water Conservation Plans, published by U.S. Bureau of Reclamation, , with Hydrosphere Inc 1997.
12. Antle John and Tom McGuckin, "Technological Innovation, Agricultural Productivity and Environment Quality" in Agriculture and Resource Economics, , edited by Gerald Carlson David Zilberman, and John Mironowski, Oxford University Press, 1993.
13. Congress of the United States, Office of Technology Assessment, U.S. Dairy Industry at a Crossroad: Biotechnology and Policy Choice, OTA-F-470, (senior contributor), 1991.
14. United States Department of Agriculture, bST and the Industry: A National, Regional and Firm Level Analysis, 1987
15. Fallart Richard, T. McGuckin, C. Betts and G. Bruner, bST and the Industry: A National, Regional and Firm Level Analysis, U.S. Department of Agriculture, AE Report Number 579, 1987
16. McGuckin Tom, "Comments on The Risk Aspects of Irrigation Scheduling: A Firm Perspective", Special Report #821, Southern Region Project S -180, February 1988.
17. McGuckin, J. T. and J. Ball, "An Assessment of Selected Management Practices for Reducing Nonpoint Pollution of Surface Waters", Report to the Interstate Streams Commission, 1982 (senior author).

#### Papers presented before Professional Societies

1. Southern Regional Meeting on Risk, S-180; "Computerized Risk Management Tools, a Comment", March 1987.
2. Western Regional Meeting on Water Efficiency, W-178, "Review of Economic and Technical Issues in Water Management", Santa Fe, New Mexico, February 1987.
3. Western Agricultural Economics Association; "Long Run Risk: A Comment", Published Abstract, July 1985.
4. Western Agricultural Economics Association; "The Concept of Stochastic Dominance Bid prices as Applied to Forage Harvesting Technologies", Published Abstract, July 1980.

### **RESEARCH CONTRACTS**

Research has concentrated on eight areas of inquiry: 1. Electrical Deregulation 2. Water Conservation, 3. Environmental Pollution, 4. Measurement of Risks in Nuclear Waste Transportation, 5. Analysis of Production Inefficiency in Industry, 6. Water quality management, 7. Federal agricultural policy analysis, 8. Economics of Biotechnology and 8. Economics of Integrated Pest Management. Resrach grants are listed in the following Table

**RESEARCH AWARDS**

Outstanding Research Project, USDA Cooperative Research Program, 1987.

Outstanding Dissertation Award, Department of Agricultural Economics, University of Wisconsin-Madison, 1980.

Outstanding Thesis Award, Department of Economics, Colorado State University, 1976.

**RESUME**

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**PERSONAL**

**Date of Birth:** February 9, 1949  
**Marital Status:** Married

**EDUCATION**

Ph.D. in Economics, May 1980, Northern Illinois University, DeKalb, Illinois  
M.A. in Economics, December 1973, University of Iowa, Iowa City, Iowa  
B.A. in Economics, May 1971, Coe College, Cedar Rapids, Iowa

**TEACHING AND RESEARCH INTERESTS**

Public Finance  
Public Policy  
Borderland Studies

**EXPERIENCE**

Professor, Department of Economics and International Business, College of Business Administration and Economics, New Mexico State University, Las Cruces, New Mexico, August 2003 to present.

Associate Professor, Department of Economics and International Business, College of Business Administration and Economics, New Mexico State University, Las Cruces, New Mexico, August 1987 to July 2003.

Assistant Professor, Department of Economics, College of Business Administration and Economics, New Mexico State University, Las Cruces, New Mexico, September 1981 to July 1987.

Assistant Professor, Department of Economics and the Department of Graduate

New Mexico State University  
Programs in Management, College of St. Thomas, St. Paul, Minnesota, September  
1980 to August 1981.

Final Report

Instructor, Department of Economics and the Department of Graduate Programs in  
Management, College of St. Thomas, St. Paul, Minnesota, September 1979 to  
August 1980.

Instructor, Department of Economics, Northern Illinois University, DeKalb, Illinois,  
September 1977 to May 1979.

Economist and Assistant Planner, Kane County, Development Department, Geneva,  
Illinois, January 1975 to June 1975.

## **PAPERS**

“Growing an Entrepreneurial Economy: Small and Emerging Business in New Mexico,”  
New Mexico First Background Report, with Kenneth J. Martin, Robin Peterson,  
Edmund Scribner and Judy Weisinger, Spring 2004.

“Indian Casino Gambling and State Revenue: Some Further Evidence,” with Charles  
Stehwien, *Public Finance Review*, 30(4):320-330, July 2002.

“New Mexico’s Options for 21<sup>st</sup> Century Growth and Prosperity,” New Mexico First  
Background Report, with James Peach, Richard Adkisson and Dennis Clason,  
October 2002.

“A “New and Improved” Curriculum: Process and Outcomes,” with Elise Truly Sautter,  
Eric R. Pratt and Sherry K. Mills, *Marketing Education Review*, 10(3):1195-1200,  
March 20, 1995.

"An Analysis of Tax Incentives for Enhanced Oil Recovery," *The Natural Resources Tax  
Review*, 8(2):205-211, February 1995 (also reprinted in *State Tax Notes*,  
8(12):1195-1200, March 20, 1995.

"Immigration and the Earnings of Youth in the U.S.," with B. N. Matta, *International  
Migration Review*, 22(18):104-116, Spring 1988.

An Inquiry into Race/Ethnicity Differences of Immigration's Effects on Youth Earnings,"  
with B.N. Matta, *Journal of the Southwestern Society of Economists*, 14(1):66-  
70, 1987.

"The Economic Impact of Changes in State Investment Policies: A Focus on New  
Mexico," with G. V. Barrett and B. E. Lee, *Municipal Finance Journal*, 8(3):249-  
262, Summer 1987.

"A Comparison of the Distribution of Expenditures of New Mexico and the States Contiguous to New Mexico," *New Mexico Business Forum*, 3(2):33-37, October 1985.

"Hired Farmworker Earnings in the U.S.-Mexico Border and Non-Border Areas," with Benjamin N. Matta, *The Borderlands Journal*, 8(2):111-127, Spring 1985.

"A Comparison of the Revenue Structures of New Mexico and the States Contiguous to New Mexico," *New Mexico Business Forum*,. 3(1):8-14, January 1985.

"Analysis of the Financial Impact of the State Mortgage Purchase Program on New Mexico State Revenues," with Orman Paananen, *New Mexico Business Forum*, 2(2):31-37, October 1984.

"The Changing Structure of New Mexico Revenues: 1967-1982," with Kathleen Brook, *New Mexico Business Forum*, 2(2):11-17, October 1984.

"The Socio-Economic Impact of NMSU on Its Local Environment," with Kenneth Nowotny, *New Mexico Business Forum*, 1(2):47-50, September 1983.

"The Relationship of the New Mexico Economy to the United States Economy," *New Mexico Business Forum*, 1(2):21-26, September 1983.

### **WORKING PAPERS**

"State Tax Incentives and Enhanced Oil Recovery," with Arley Williams.

"Immigration's Impact on Wage Offers and Labor Supply Responses of Native-Born Youth: Evidence from a Local Labor Market Analysis," with B.N. Matta, Working Paper Series, No. 88-2, Dept. of Economics, NMSU, February 1988.

"The Impact of Immigration on the Earnings of Youth: Some Racial/Ethnicity Differences," with B.N. Matta, Working Paper Series, No. 88-3, Dept. of Economics, NMSU, February 1988.

"Coercion and the Provision of Public Goods," working paper, 1981.

"Optimal Decision Rules and Political Influence," with Thomas R. Dalton, working paper, 1981.

**REPORTS**

“Arrowhead Research Park Business Plan,” report prepared for the Board of Regents, NMSU, with Lizbeth Ellis, Kenneth J. Martin, Shaun McQuitty, James T. Peach, and Edmund Scribner, October 2004.

“The Economic Impact on the State of New Mexico of Selling Elk Permits,” report prepared for the New Mexico Department of Game and Fish, April 2004.

“Economic Impact of Reduced Operations at Ruidoso Downs Race Track and Billy the Kid Casino Arising from the Establishment of a Race Track in Hobbs, New Mexico, on the Economy of Lincoln County, New Mexico,” with Christopher Erickson, September 2003.

“The Market for Affordable Housing in the Las Cruces, MSA,” report prepared for Las Cruces Affordable Housing, Inc., a non-profit Community Housing Development Corporation, Sept. 2000.

“Affordable Housing Credit Union Service Organization,” a business plan developed for a consortium of the El Paso Employees Federal Credit Union and other credit unions, Dec. 1999.

“Local Economic Development - The State of New Mexico: A Preliminary Report,” study prepared for and sponsored by the Bureau of Business Research and Services, College of Business Administration and Economics, June 1999

“College of Business Administration and Economics Student Enrollment, 1986-96,” a study prepared for and sponsored by Danny Arnold, College of Business Administration and Economics, October 1997.

"The Socio-Economic Impact of New Mexico State University and Dona Ana Branch Community College on Dona Ana County, Fiscal Year 1990-1991," report submitted to the Office of the President, NMSU, September 1991.

"The Impact of the Primate Research Institute on Otero County, the City of Alamogordo and New Mexico State University," with K. Brook, J.S. Devlin, M.G. Ellis and P. Wichert, report submitted to the Vice-President for Research, NMSU, sponsored by the Center for Business Research and Services, College of Business Administration and Economics, NMSU, Fall 1988.

"The Economic Impact of a New Business on a Local Economy: The Case of the B. P. John Company and Las Cruces, New Mexico," The Center for Business Research

New Mexico State University  
and Services, College of Business Administration and Economics, NMSU,  
Summer 1988.

Final Report

New Mexico's Public Funds Investment Policies: Impact on Financial Institutions and the Economy, with G. V. Barrett and B. E. Lee, submitted to the New Mexico Banker's Association, June 1986.

"Tax Increases to Finance the BEF Recommendation for Higher Education," presented to James E. Halligan, President, NMSU, January 1986.

"Toward a Rational Financing of Government Expenditures," with Kathleen Brook, submitted to New Mexico Senator Jeff Bingaman, August 1985.

The Demand for Chile in Eastern New Mexico and Western Texas, with Carl E. Enomoto, Technical Innovation Center, NMSU, June 1985.

An Analysis of New Mexico's \$100,000,000 Mortgage Program, Ch. VI, with Orman Paananen, Center for Real Estate and Land Resource Research, College of Business Administration and Economics, NMSU, June 1984.

The Socio-Economic Impact of NMSU on Its Local Environment, with Kenneth Nowotny, presented to the Office of the President, NMSU, 1983.

Fox River Study I, 1974-75, Kane County Urban Development, Geneva, Illinois, 1975.

Dundee Township Intermunicipal Planning Program, 1974-75, Kane County Urban Development, Geneva, Illinois, 1975.

## **PROFESSIONAL MEETINGS AND PRESENTATIONS**

Annual Western States Economic Summit, Tucson, 1995-1998.

International Boundaries and Environmental Security: Frameworks for Regional Cooperation Conference in Singapore, June 1995, Session Chair.

Federation of Tax Administrators Annual Revenue Estimating and Tax Research Conference, 1994, 1995, 1998, 2002, 2003, 2004.

September 2004, presented paper, "Designing State Low-Income Tax Credits: New Mexico's LICTR vs. a State Earned-Income Tax Credit," with Thomas Clifford, Allen Maury and Pankaj Sharma.

September 2003, presented paper, "Gross receipts on Food: Analysis of Economic and Administrative Issues," with Thomas Clifford and Charles Stehwien.

New Mexico State University

Final Report

September 2002, presented paper, "Indian Casino Gambling and State Revenue: Some Further Evidence," with Charles Stehwien.

September 1998, presented paper, "Water and Water Markets in the West: A Discussion."

October 1995, Session Chair.

October 1994, presented the paper "An Analysis of Tax Incentives for Enhanced Oil Recovery."

Association of Borderlands Scholars Annual Meeting, 1984 to 2004.

Western Social Science Association Annual Meeting, 1984 to 2004.

April 1986, presented the paper "Immigration and the Youth Labor Market in the U.S.," with B.N. Matta.

April 1984, presented the paper "Regional Differences in Earnings of Hired Farmworkers in the U.S.: Implications for Immigration Policy," with B.N. Matta.

International Studies Association Annual Meeting, April 1992. Discussant.

Midwest Economics Association Annual Meeting, 1984, 1986, 1988, 1990, 1992, 1994. March 1992, presented the paper "State Tax Incentives and Enhanced Oil Recovery," with Arley Williams.

Rocky Mountain Council of Latin American Studies, Annual Meeting, February 1989. Session chair and discussant. Presented the paper "A Reexamination of the Border Poverty Hypothesis," with James Peach.

Southwestern Federation of Administrative Disciplines, (SWFAD), Southwestern Society of Economists, Annual Meeting, 1987, 1988.

March 1988. Presented the paper "Labor Supply Responses of Native-Born Youth in the Presence of Immigration" with B.N. Matta.

March 1987. Presented the paper "The Impact of Immigration on Youth Labor - Some Racial Differences," with B. N. Matta.

"Teaching Productivity in the Business School," workshop sponsored by the American Assembly of Collegiate Schools of Business and the American Productivity Center, March 1985.

The New Mexico Business Forum, sponsored by the College of Business Administration and Economics, NMSU. Analyst for the workshop entitled, "State Taxing Structure," November 1983.

"Gross Receipts and Compensating Tax Workshop," State of New Mexico Taxation and Revenue Department, May 1982.

Minnesota Academy of Science, 48th Annual Meeting, Mankato State University, April 1980. Presented the paper "Welfare Implications of the Political Decision-Making Process."

"Socio-Economic Problems and Prospects for the 1980's," conferences sponsored by the Center for Economic Education, College of St. Thomas, December 1979. Discussant for the fourth session: "Consumer Problems and Social Responsibilities."

### **UNIVERSITY SERVICE**

President, Association for Borderlands Studies, April 2003 to April 2004.

Vice President, Association for Borderlands Studies, April 2002 - April 2003.

Co-Editor, Journal of Borderlands Studies, 1986 - 1996

Executive Secretary, Association of Borderlands Scholars, 1987 - 1996

Coordinator, Self Evaluation Report, The College of Business Administration and Economics, for reaffirmation of accreditation with AACSB International, 2001-2002.

Director of Graduate Studies in Economics and Agricultural Economics, January 1990-May 1992, Fall 1994 - present

NMSU-North Central Review Team for Astronomy, Chairman, 1995

NMSU-North Central Review Team for Psychology, Chairman, 1996

College of Business Administration and Economics Advisory Committee to Business Research Center, 1995

University Housing Planning Committee, Fall 1987

College of Business Administration and Economics Curriculum Review and Planning Committee, Fall 1983 - present; Chairman, Fall 1984 - Fall 1985, Fall 1994 - present

Academic Appeals Board, College of Business Administration and Economics, Spring 1982 - Spring 1984, Fall 1994 -Spring 1996.

Agricultural Economics and Economics Graduate Committee, Spring 1985 - present.

Liaison to the Agricultural Economics and Business Department, Fall 1983 - Fall 1985.

Department of Economics Curriculum Review Committee, Fall 1982 - Spring 1994.

Principles Textbook Selection Committee, Department of Economics, Spring 1982 - Fall 1986.

Advisor to the Lambda Chi Alpha Social Fraternity, Spring 1982 - Fall 1994, Fall 1996-present.

Advisor to Omicron Delta Epsilon, Fall 1982 - Spring 1987.

### **PROFESSIONAL ORGANIZATIONS**

American Economics Association  
National Tax Association - Tax Institute of America  
Western Economics Association  
Midwest Economics Association  
Western Social Science Association  
Western Regional Science Association  
Association of Borderlands Scholars -- Executive Secretary  
Beta Gamma Sigma  
Omicron Delta Epsilon

### **AWARDS**

“Outstanding Performance, Service to the Community,” awarded by the College of Business Administration and Economics, NMSU, April 2002.

Sunwest Bank Award, “Outstanding Performance in Service to the College,” awarded by the College of Business Administration and Economics, April 1997.

“Outstanding Educational Contribution,” awarded by the Graduate Business Student Organization, College of Business Administration and Economics, NMSU, April 1990.

“Outstanding Researcher, 1984-1985,” awarded by the College of Business Administration and Economics, NMSU, April 1985.

October 2004

**List of Research Grants**

<b>Joint Administration of Ground Water in Conjunction with a Surface Water Market in the Paso Del Norte Region</b>	EPA/SCERP	\$55,262	2003-2004
<b>The Economic and Environmental Consequences of an International Water Market in the Paso del Norte Region that includes Ciudad Juarez</b>	EPA/SCERP	\$46,101	2002-2003
<b>Economic Analysis of Improved Water Quality in the Rio Grande Project</b>	EPA/SCERP	\$50,155	1999-2001
<b>Sustained Long Term Drought on the Rio Grande</b>	U.S.G.S. and NM-WRRI	\$345,000	1996 - 1998
<b>Regional Water Plan for Paso del Norte Region</b>	U.S. Dept of Commerce	\$500,000	1996 - 1997
<b>Water Conservation Pricing in Western Irrigation Districts</b>	U.S.G.S. and NM-WRRI	\$120,000	1996 - 1998
<b>Price and Non-price Water Conservation for Western Cities</b>	American Water Works Assoc.	\$35,000	1995 - 1996
<b>Economic Impact of Designation for the Rio Grande Silvery Minnow</b>	U.S. Fish and Wildlife	\$16,000	1995
<b>Economic Analysis for EIS of NM Spaceport</b>	NM Physical Science Lab	\$15,000	1995 - 1996
<b>Guidebook for Conservation Pricing of Irrigation Water</b>	U.S. BuRec	\$50,000	1995 - 1996
<b>Analysis of Institutions for Pollution Control along the US/Mexico Border</b>	U.S. EPA	\$155,000	1995 - 1996
<b>Measuring the Risk Cost of Nuclear Waste</b>	DOE	\$210,000	1993 - 1995
<b>Impact of bovine Somatotropin on the U.S. Dairy Industry</b>	USDA/ERS.	\$50,000	1990
<b>Optimal Irrigation Scheduling with Saline Water</b>	NM-WRRI	\$57,000	1986
<b>Competition for Western Water</b>	USDA/ERS	\$105,000	1987 - 1991
<b>Federal Tax Changes on the US Dairy</b>	USDA/ERS	\$30,000	1986

**CONSULTING**

City of Las Cruces, Utilities Department, Contact Jorge Garcia, Director; Subject Cost of Service for Municipal Rates

Texas New Mexico Power Inc.; Ft Worth Texas, Contact: Julia Garcia; Subject Electrical Deregulation

NM Attorney General: Santa Fe, NM; Contact Jeff Taylor: Subject Electrical Deregulation

Intel Corporation, Rio Rancho, NM; Contact Don Hutchison, Subject: Water Rights Testimony;

Lower Arkansas Water Management Association, Lamar CO; Contact Don Higby. Subject: Irrigation District Organization;

Western Water Policy Commission, Albuquerque, NM; Contact Denise Fort (University of New Mexico); Subject Water Policy

American Water Works Association - Research Foundation, Denver Colorado; Contact Kim Garrity; Subject Urban Water Conservation

US Fish and Wildlife, Albuquerque, NM, Contact: Jennifer Proust; Subject: Endangered Species

US Bureau of Reclamation, Denver Colorado; Contact Randy Christoferson; Subject Agricultural Water Conservation

Sandia Corp, Albuquerque, NM. Contact Teresa Sype; Subject Risk Analysis

Ford - New Holland, Erie Penn, Contact Robert Jones; Subject Farm equipment analysis

US Office of Technological Assessment, Washington, D.C. Contact: Mike Phillips; Subject New farm technology