The Potential Economic Impact of the National Broadband Plan on the New Mexico Exchange Carriers Group

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Executive Summary

This report contains an assessment of the economic impact of proposed Federal Communications Commission (FCC) rule changes on the New Mexico economy (FCC February 9, 2011). The proposed FCC rule changes are associated with a 2009 congressional mandate to establish a National Broadband Plan to ensure that all Americans have access to broadband. The rule changes would essentially eliminate the Universal Service Fund (USF) mechanism for providing revenue to rural exchange carriers –a long-standing major source of revenue for rural carriers. The report has been prepared by Arrowhead Center under contract with the New Mexico Exchange Carriers Group.

The economic impacts of the proposed rule changes would be felt mainly in the rural areas of New Mexico. New Mexico's non-metropolitan counties generally exhibit a slow-growing or declining population, low population density, relatively low income levels, and high poverty rates.

The economic impacts of the elimination of Universal Service Funds to 11 of the 13 members of the New Mexico Exchange Carriers Group have been estimated in this report. The approach taken was to reduce USF revenue in the telecommunications sector of a long range, dynamic economic model (REMI PI+). The $34.5 million reduction in USF funds was assumed to begin in 2012 and continue through 2021. The REMI model is designed to capture relationships among industries and households in a comprehensive fashion. The estimated impacts are reported as differences from a baseline projection in the REMI model.

The estimated impacts are substantial. The estimated impacts in 2012 include the loss of 99 jobs in the telecommunications industry, 261 private sector jobs, and a total employment loss of 335 jobs. Additional impacts in 2012 include reduced New Mexico personal income of $14.1 million and a decrease in New Mexico tax revenue of $978,000.

In the ten year projection period (2012 to 2021), the telecommunications industry is estimated to lose a total of 805 jobs or about 80 jobs per year. During this period, private non-farm employment is estimated to decrease by 2,400 jobs while total employment is projected to decrease by 3,146 jobs. New Mexico personal income is projected to decrease by $200.3 million during the ten year projection period and State tax revenue would decline by 13.6 million.

The Potential Economic Impact of the National Broadband Plan on the New Mexico Exchange Carriers Group

Introduction

In 2009, Congress mandated that the Federal Communications Commission (FCC) develop a National Broadband plan "to ensure that every American has access to broadband capability." (FCC National Broadband Plan, Executive Summary, http://www.broadband.gov/plan/executive-summary/). The FCC estimates that 100 million Americans are without broadband access (FCC National Broadband Plan). In response, the FCC released Notices of Proposed Rulemaking (NPRM) for the implementation of the National Broadband Plan for the United States (February 9, 2011 and March 2010). The FCC proposal includes the reallocation of Federal Universal Service Funds (USF) from rural exchange carriers to fund the national broadband plan. The FCC proposals will affect rural exchange carriers throughout the nation. This report contains an assessment of the economic impact of the proposed changes on the New Mexico economy.

New Mexico Exchange Carriers Group:

The New Mexico Exchange Carrier Group (NMECG) contracted with Arrowhead Center, Inc., to estimate the impact of this transfer of funds on the State of New Mexico. The NMECG consists of thirteen rural exchange carriers (Table 1.1). Economic impact estimates are presented later in this report based on data from eleven of the thirteen members of NMCEG. Century Link and Windstream Telecommunications are excluded from the analysis.

Table 1.1

New Mexico Exchange Carriers Group (NMCEG) Members
Baca Valley Telephone Company
Century Link
Dell Telephone Cooperative
ENMR-Plateau Telecommunications
La Jicarita Rural Telecommunications
Leaco Rural Telecommunications
Penasco Valley Telephone Co-operative
Yucca Telecom
Tularosa Basin Telephone Company
Valley Telephone Co-operative, Inc.
Western New Mexico Telephone Company
Windstream Telecommunications
Sacred Wind Communications

Source: New Mexico Exchange Carriers Group http://nmecg.com/ July 28, 2011.

Rural exchange carriers (REC) provide telephone service to rural areas within the state (Map 1). RECs provide service to households and businesses in parts of every county in the state. Areas not covered by RECs are primarily the metropolitan areas in the state and the Rio Grande Corridor. The eleven RECs included in this study provide 31,542 access lines and serve 80,281 square miles (Table 1.2).

Table 1.2

New Mexico Exchange Carrier Group Summary Data
For Cooperatives and Small Commercial Companies Year End 2010*

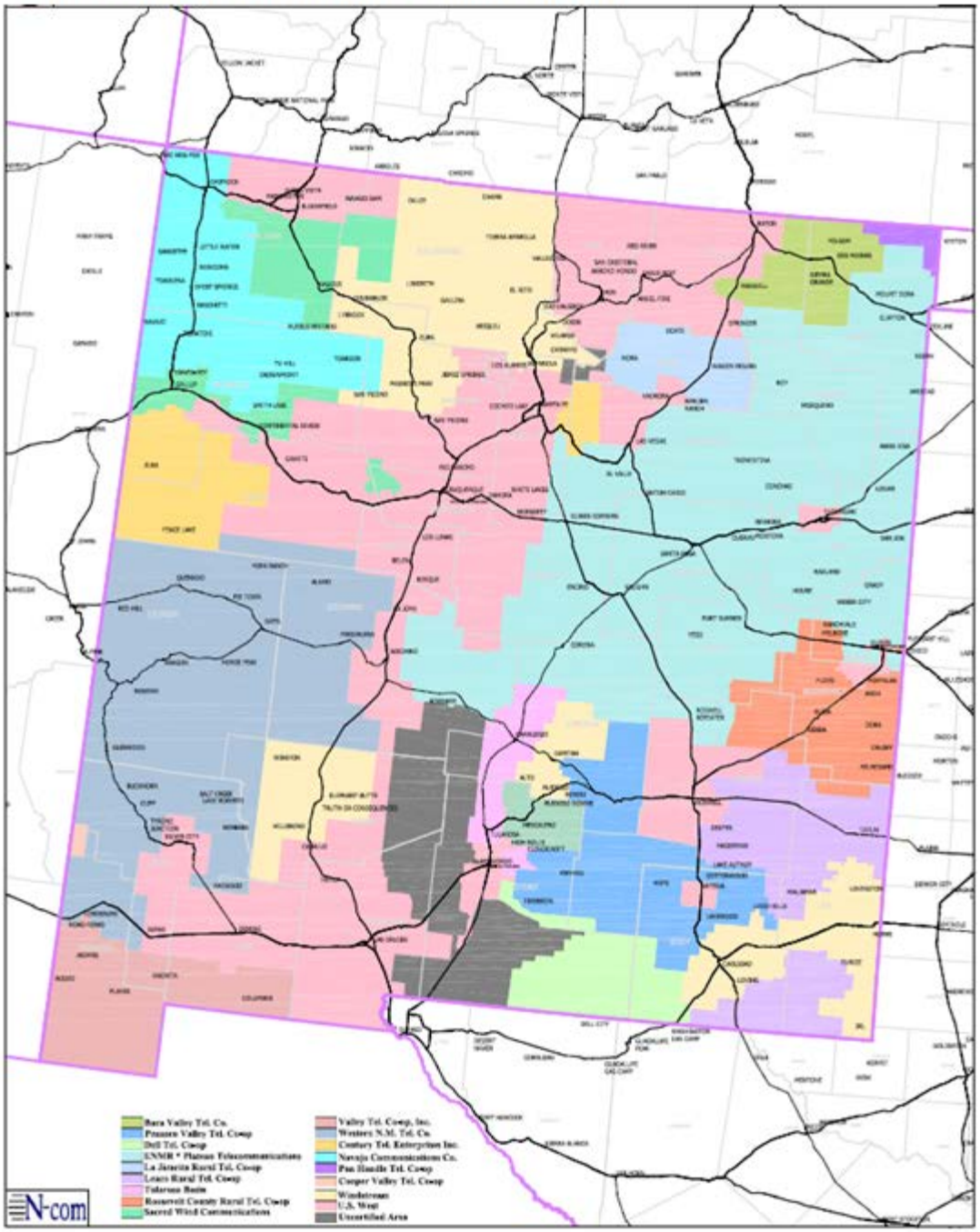
New Mexico Jobs	518
New Mexico Annual Payroll	$23,549,214
Access Lines	31,542
Broadband Capable Lines	90%
Miles of Fiber	5,000
Square Miles Served	80,281
Access Lines per Square Mile	1.8
Total State & Local Taxes Paid	$4,763,977

* For 11 cooperatives and small commercial companies. Excludes Centurylink and Windstream.

Source: New Mexico Exchange Carriers Group Presentation to the Science Technology & Telecommunications Interim Legislative Committee, Santa Fe, NM July 21, 2011
http://www.nmlegis.gov/lcs/handouts/

Map 1

New Mexico Carriers Exchange Group Service Areas



Source: New Mexico Exchange Carriers Group http://nmecg.com/page3/page3.html

New Mexico Demographic and Economic Profile

In 2010, New Mexico's population reached two million for the first time. For the state as a whole, population increased by 13.7 percent from the 2000 census. Population growth between 2000 and 2010 was highly concentrated in the state's Metropolitan Statistical Areas (MSAs) with 82.3 percent of the state's population increase occurring in the state's four MSA's (Table 1.3). Fourteen of New Mexico's thirty-three counties lost population during the last decade (Map 2) and none of these counties were MSA counties. Significant rural to urban migration has been a pattern in New Mexico (and nationally) since the early part of the 20th century. Eight New Mexico counties had a smaller population in 2010 than they did in 1930 (Map 3).

New Mexico's population density (2010) of 16.9 persons per square mile is substantially lower than that of the U.S (87.4 persons per square mile). There is a great deal of county to county variation in population density in New Mexico (Map 4 and Table 1.3). Among New Mexico counties, 2010 population density ranged from 0.5 persons per square mile in Catron County to 567 persons per square mile in Bernalillo County. The MSAs combined had a population density of 147.4 persons per square mile while the non-MSA counties population density was 9.1 persons per square mile.

Table 1.4 provides 2010 data on the labor force of the United States, New Mexico, and New Mexico's 33 counties. In 2010, New Mexico's unemployment rate (8.4 percent) was below the national average (9.6 percent), but the unemployment rates in New Mexico's counties vary widely. The highest unemployment rates in the state (above 10%) are all in rural counties.

New Mexico is also a relatively poor state with a median household income of 83.1 percent of the national figure in recent years (Table 1.5).

The income data in Table 1.5 are from the 2000 Census and from the Census Bureau's American Community Survey. The 2000 Census data reflect income in calendar year 1999. Since the 2000 Census, the American Community Survey was initiated to provide more frequent data on the social and economic characteristics of the population. For areas with small population, the social and economic data are released as averages of several years. In this case, the data for many smaller New Mexico counties are available only as averages for 2005 to 2009.

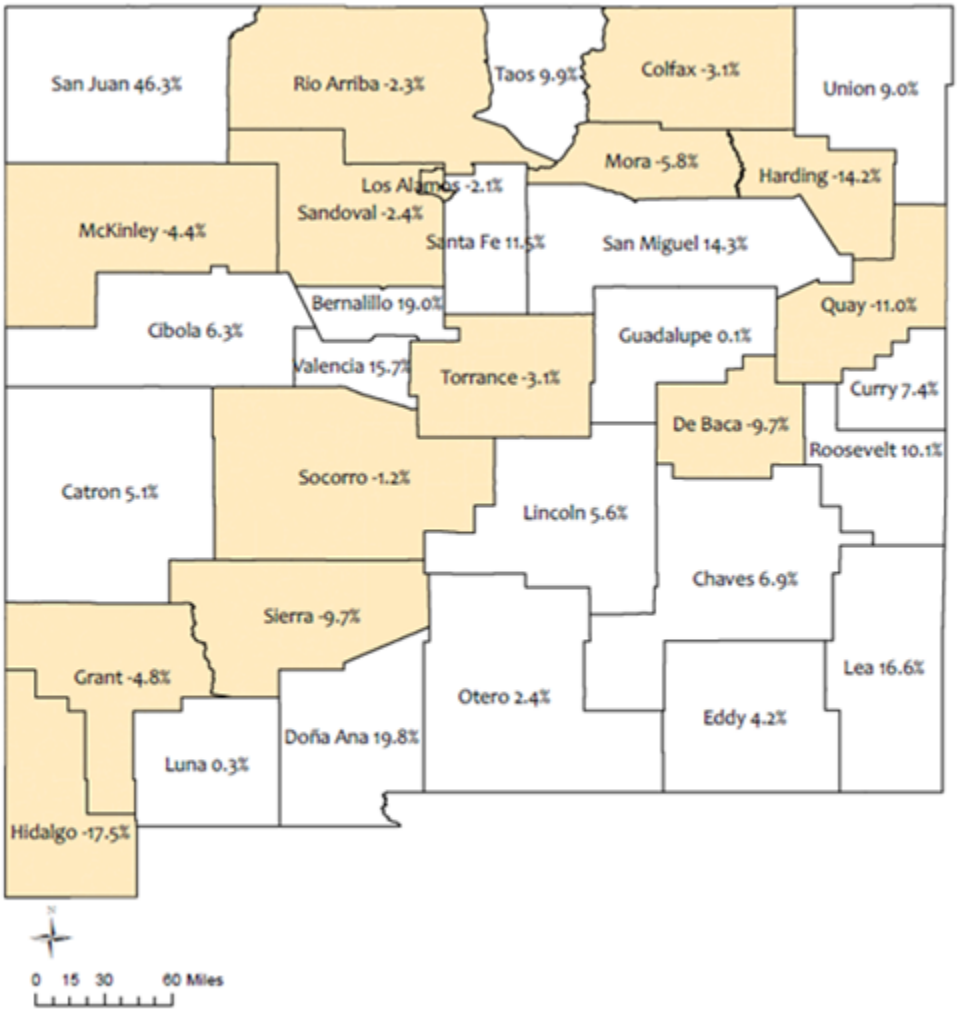
In the most recent data, only two counties (Los Alamos and Sandoval) had higher median household income than the nation. Seven rural counties (Catron, De Baca, Guadalupe, Luna, Quay, San Miguel, and Sierra) had median household incomes below 60 percent of the national average.

In 2009, poverty rates (Table 1.6) of individuals in New Mexico (18.2 percent) were also higher than the nation (14.3 percent). In 2009, only three Non-MSA counties (Eddy, Los Alamos, and Sandoval) had a poverty rate lower than the national average.

In short, New Mexico's non-metropolitan counties generally exhibit a slow-growing or declining population, low population density, relatively low income levels, and high poverty rates.

Map 2

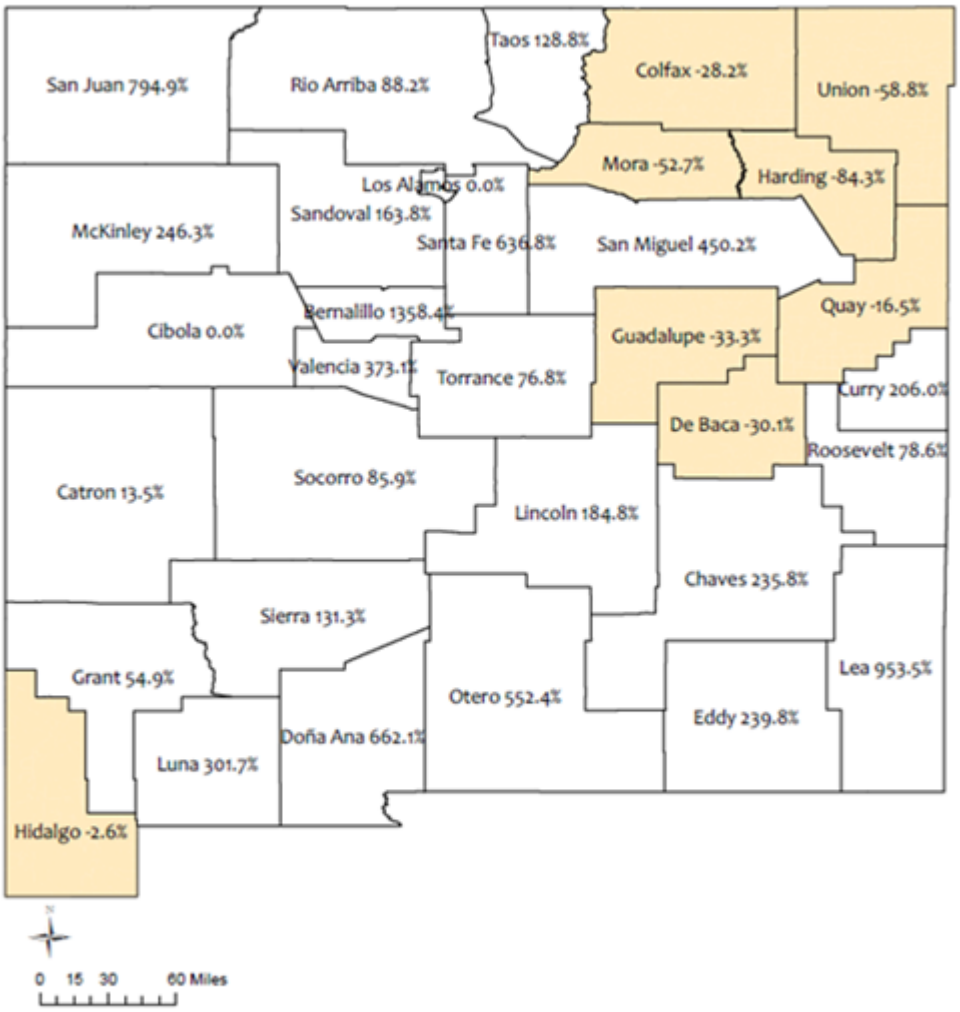
Population Change in New Mexico: 2000 to 2010
(14 shaded counties lost population between 2000 and 2010)



Source: Arrowhead Center, New Mexico State University. Based on U.S. Bureau of the Census data. Http://www.factfinder.gov.

Map 3

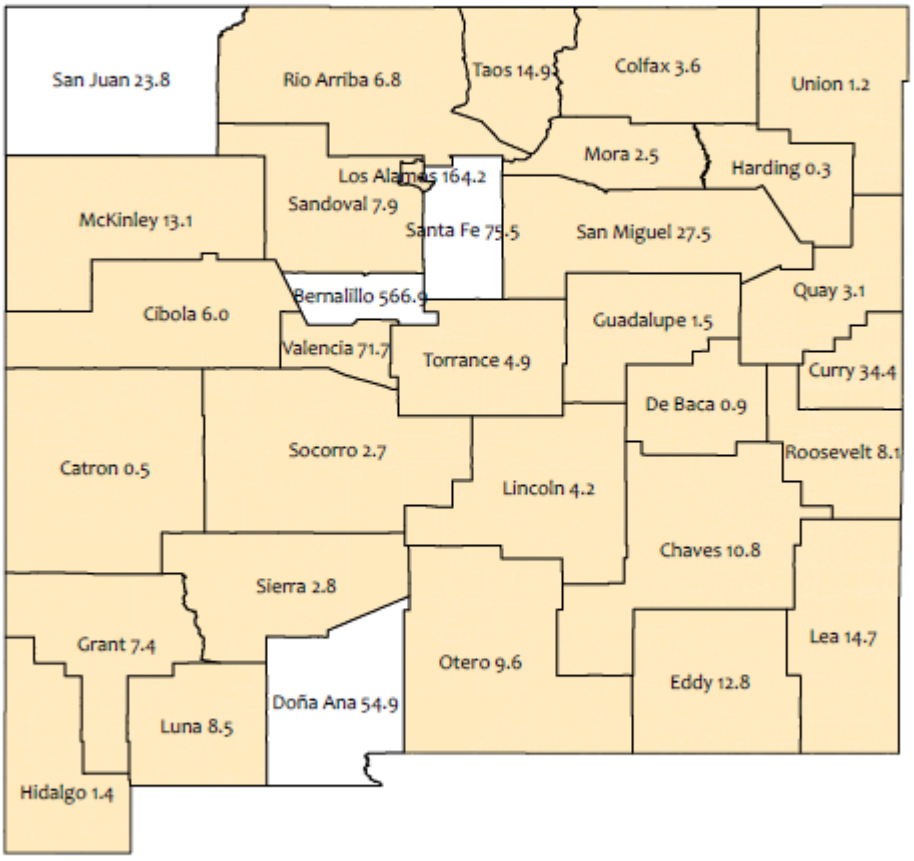
Population Change in New Mexico: 1930 to 2010
(8 shaded counties had smaller population size in 2010 than in 1930)



Source: Arrowhead Center, New Mexico State University. Based on U.S. Bureau of the Census data. Http://www.factfinder.gov.

Map 4

Population Density New Mexico Counties: 2010
(persons per square mile, non-MSA Counties Shaded)



Source: Arrowhead Center, New Mexico State University. Based on U.S. Bureau of the Census data. Http://www.factfinder.gov.

Table 1.3

Basic Demographic Data for New Mexico and its Counties

Area	Area (Square Miles)	Population 2000	Population 2010	Percent Change in Population 2000 to 2010	Population Density 2010 (Persons per Square Mile)
MSA Counties					
Bernalillo County	1,169	556,678	662,564	19.0	566.9
Dona Ana County	3,815	174,682	209,233	19.8	54.9
San Juan County	5,538	89,908	131,561	46.3	23.8
Santa Fe County	1,911	129,292	144,170	11.5	75.5
MSA Sub-total	12,432	950,560	1,147,528	20.7	92.3
Non-MSA counties					
Catron County	6,929	3,543	3,725	5.1	0.5
Chaves County	6,075	61,382	65,645	6.9	10.8
Cibola County	4,542	25,595	27,213	6.3	6.0
Colfax County	3,768	14,189	13,750	-3.1	3.6
Curry County	1,408	45,044	48,376	7.4	34.4
De Baca County	2,334	2,240	2,022	-9.7	0.9
Eddy County	4,198	51,658	53,829	4.2	12.8
Grant County	3,968	31,002	29,514	-4.8	7.4
Guadalupe County	3,032	4,680	4,687	0.1	1.5
Harding County	2,126	810	695	-14.2	0.3
Hidalgo County	3,446	5,932	4,894	-17.5	1.4
Lea County	4,394	55,511	64,727	16.6	14.7
Lincoln County	4,831	19,411	20,497	5.6	4.2
Los Alamos County	109	18,343	17,950	-2.1	164.2
Luna County	2,965	25,016	25,095	0.3	8.5
McKinley County	5,455	74,798	71,492	-4.4	13.1
Mora County	1,933	5,180	4,881	-5.8	2.5
Otero County	6,627	62,298	63,797	2.4	9.6
Quay County	2,882	10,155	9,041	-11.0	3.1
Rio Arriba County	5,896	41,190	40,246	-2.3	6.8
Roosevelt County	2,455	18,018	19,846	10.1	8.1
Sandoval County	3,714	30,126	29,393	-2.4	7.9
San Miguel County	4,736	113,801	130,044	14.3	27.5
Sierra County	4,236	13,270	11,988	-9.7	2.8
Socorro County	6,649	18,078	17,866	-1.2	2.7
Taos County	2,205	29,979	32,937	9.9	14.9
Torrance County	3,346	16,911	16,383	-3.1	4.9
Union County	3,831	4,174	4,549	9.0	1.2
Valencia County	1,068	66,152	76,569	15.7	71.7
Non-MSA counties	109,157	868,486	911,651	5.0	8.4
New Mexico	121,589	1,819,046	2,059,179	13.2	16.9

Sources: Land Area, U.S. Bureau of the Census, Sate and County Quick Facts (http://quickfacts.census.gov). Population 2000 and 2010: U.S. Bureau of the Census, American Factfinder2, http://factfinder2.gov.

Table 1.4

Labor Market Data for New Mexico Counties, New Mexico and the United States: 2010

	Labor Force	Employed	Unemployed	Unemployment Rate
MSA Counties				
Bernalillo County	313,345	286,762	26,583	8.5
Dona Ana County	93,644	86,005	7,639	8.2
San Juan County	56,513	51,107	5,406	9.6
Santa Fe County	77,296	71,844	5,452	7.1
MSA Average	540,798	495,718	45,080	8.3
Non-MSA counties				
Catron County	1,604	1,452	152	9.5
Chaves County	27,507	25,267	2,240	8.1
Cibola County	12,532	11,557	975	7.8
Colfax County	6,686	6,114	572	8.6
Curry County	21,795	20,616	1,179	5.4
De Baca County	839	791	48	5.7
Eddy County	28,869	27,135	1,734	6.0
Grant County	11,638	10,369	1,269	10.9
Guadalupe County	1,805	1,618	187	10.4
Harding County	384	364	20	5.2
Hidalgo County	2,716	2,502	214	7.9
Lea County	28,275	26,110	2,165	7.7
Lincoln County	11,002	10,249	753	6.8
Los Alamos County	10,330	9,949	381	3.7
Luna County	12,996	10,560	2,436	18.7
McKinley County	27,521	24,869	2,652	9.6
Mora County	2,046	1,725	321	15.7
Otero County	26,451	24,489	1,962	7.4
Quay County	4,029	3,678	351	8.7
Rio Arriba County	20,438	18,661	1,777	8.7
Roosevelt County	9,338	8,785	553	5.9
Sandoval County	56,829	51,535	5,294	9.3
San Miguel County	13,364	12,230	1,134	8.5
Sierra County	6,111	5,694	417	6.8
Socorro County	9,526	8,943	583	6.1
Taos County	17,636	15,875	1,761	10.0
Torrance County	6,975	6,255	720	10.3
Union County	1,906	1,784	122	6.4
Valencia County	31,377	28,223	3,154	10.1
Non-MSA counties	412,525	377,399	35,126	8.5
New Mexico	953,314	873,112	80,202	8.4
United States	153,889,000	139,064,000	14,825,000	9.6

Sources: New Mexico and Counties, U.S. Bureau of Labor Statics, Local Area Unemployment Statistics and Current Popualtion Surve. http://www.bls.gov/data/

Table 1.5

Median Household Income in New Mexico and its Counties: 2000 and 2010

Area	Median Household Income 2000	Median Household Income 2005-2009*	Percent Change in Median Household Income	Percent of U.S. Median Household Income 2000	Percent of US Median Household Income 2005-2009
MSA Counties					
Bernalillo County	38,788	46,121	18.9	92.4	89.7
Dona Ana County	29,808	35,544	19.2	71.0	69.1
San Juan County	33,762	45,361	34.4	80.4	88.2
Santa Fe County	42,207	52,923	25.4	100.5	102.9
MSA Average	36,141	44,987	24.5	86.1	87.5
Non-MSA counties					
Catron County	23,892	30,413	27.3	56.9	59.1
Chaves County	28,513	36,445	27.8	67.9	70.9
Cibola County	27,754	35,146	26.6	66.1	68.3
Colfax County	30,744	39,243	27.6	73.2	76.3
Curry County	28,917	36,621	26.6	68.9	71.2
De Baca County	25,441	27,821	9.4	60.6	54.1
Eddy County	31,998	44,510	39.1	76.2	86.6
Grant County	29,134	35,896	23.2	69.4	69.8
Guadalupe County	24,783	29,085	17.4	59.0	56.6
Harding County	26,111	31,042	18.9	62.2	60.4
Hidalgo County	24,819	39,020	57.2	59.1	75.9
Lea County	29,799	42,816	43.7	71.0	83.3
Lincoln County	33,886	44,079	30.1	80.7	85.7
Los Alamos County	78,993	100,423	27.1	188.1	195.3
Luna County	20,784	26,661	28.3	49.5	51.8
McKinley County	25,005	32,615	30.4	59.5	63.4
Mora County	24,518	33,622	37.1	58.4	65.4
Otero County	30,861	38,262	24.0	73.5	74.4
Quay County	24,894	29,737	19.5	59.3	57.8
Rio Arriba County	29,429	45,514	54.7	70.1	88.5
Roosevelt County	26,586	32,163	21.0	63.3	62.5
Sandoval County	44,949	56,703	26.1	107.0	110.3
San Miguel County	26,524	30,356	14.4	63.2	59.0
Sierra County	24,152	25,642	6.2	57.5	49.9
Socorro County	23,439	32,323	37.9	55.8	62.9
Taos County	26,762	35,800	33.8	63.7	69.6
Torrance County	30,446	35,146	15.4	72.5	68.3
Union County	28,080	37,415	33.2	66.9	72.8
Valencia County	34,099	42,955	26.0	81.2	83.5
Non-MSA counties	30,765	39,189	27.4	73.3	76.2
New Mexico	34,133	42,742	25.2	81.3	83.1
United States	41,994	51,425	22.5	100.0	100.0

Sources: Household Income in 2000: U.S. Bureau of the Census, Census of Population and Housing, American Factfinder. Household Income 2005-2009, U.S. Bureau of the Census, American Community Survey, 2005-2009, detailed tables.
American Factfinder, http://factfinder2.gov.

Table 1.6

Poverty Status in New Mexico Counties, New Mexico and the United States
All individuals for whom poverty status is determined
Percent below poverty level

	Census 2000	2009	Percent Change	Percent of US 2009
United States	12.4	14.3	15.3	100.0
New Mexico	18.4	18.2	-1.1	127.3
MSA				
Bernalillo County, New Mexico	13.7	15.6	13.9	109.1
Dona Ana County, New Mexico	25.4	24.8	-2.4	173.4
Santa Fe County, New Mexico	12.0	12.7	5.8	88.8
San Juan County, New Mexico	21.5	20.6	-4.2	144.1
MSA Counties (Average)	18.2	18.4	3.3	128.8
Non-MSA				
Catron County, New Mexico	24.5	22.0	-10.2	153.8
Chaves County, New Mexico	21.3	20.8	-2.3	145.5
Cibola County, New Mexico	24.8	25.8	4.0	180.4
Colfax County, New Mexico	14.8	17.3	16.9	121.0
Curry County, New Mexico	19.0	17.9	-5.8	125.2
De Baca County, New Mexico	17.7	21.9	23.7	153.1
Eddy County, New Mexico	17.2	13.6	-20.9	95.1
Grant County, New Mexico	18.7	19.5	4.3	136.4
Guadalupe County, New Mexico	21.6	25.9	19.9	181.1
Harding County, New Mexico	16.3	15.8	-3.1	110.5
Hidalgo County, New Mexico	27.3	23.6	-13.6	165.0
Lea County, New Mexico	21.1	15.2	-28.0	106.3
Lincoln County, New Mexico	14.9	17.4	16.8	121.7
Los Alamos County, New Mexico	2.9	3.1	6.9	21.7
Luna County, New Mexico	32.9	30.5	-7.3	213.3
McKinley County, New Mexico	36.1	28.4	-21.3	198.6
Mora County, New Mexico	25.4	23.5	-7.5	164.3
Otero County, New Mexico	19.3	20.2	4.7	141.3
Quay County, New Mexico	20.9	23.9	14.4	167.1
Rio Arriba County, New Mexico	20.3	18.9	-6.9	132.2
Roosevelt County, New Mexico	22.7	22.1	-2.6	154.5
Sandoval County, New Mexico	12.1	11.0	-9.1	76.9
San Miguel County, New Mexico	24.4	24.8	1.6	173.4
Sierra County, New Mexico	20.9	27.0	29.2	188.8
Socorro County, New Mexico	31.7	28.1	-11.4	196.5
Taos County, New Mexico	20.9	19.7	-5.7	137.8
Torrance County, New Mexico	19.0	24.5	28.9	171.3
Union County, New Mexico	18.1	16.1	-11.0	112.6
Valencia County, New Mexico	16.8	20.2	20.2	141.3
NON-MSA Average	20.8	20.6	0.9	144.4

Source: U.S. Census Bureau, Small Area Income and Poverty Estimates
http://www.census.gov/did/www/saipe/county.html

The Methods of Economic Impact Analysis

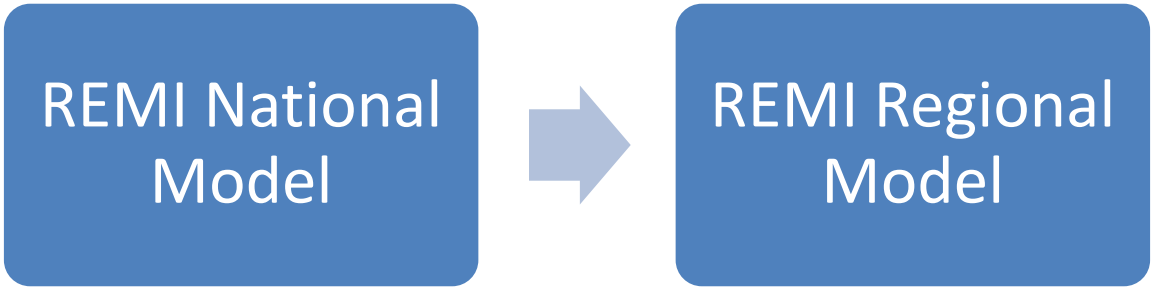
Economic impact analysis is an attempt to measure the net change in economic activity in a given geographic area that results from an exogenous change in economic activity. Often, the change in economic activity refers to new spending or employment associated with a new business or a business expansion. The same techniques can be used to assess a contraction of economic activity such as the closure of a military base or, as in this case, the elimination of the Universal Service Fund payment mechanism for rural carriers.

The main idea behind economic impact analysis is that one more (less) dollar spent in a local or regional economy results in a greater than one dollar change in economic activity in the area. The most common and widely-respected method of examining such changes involves the use economic models called input-output models. A key feature of input-output models is that they are ideally suited to capture relationships among industries. That is, input-output models are designed to capture the effects of a change in one industry on other industries and households.

Commonly used modeling systems to perform economic impact analysis are: RIMS II, REMI, and IMPLAN. All three modeling systems are based on the national input-output model produced by the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce. The national model is scaled to state and county areas by the providers of the models. The three main regional models differ in their approach to scaling the national model, the number and type of variables included, and in the software provided.

The RIMS II (regional input-output modeling system) system is produced by the U.S. Department of Commerce, Bureau of Economic Analysis (http://www.bea.gov/regional/rims/index.cfm). The REMI models are privately produced and customized to user specified geography by REMI (Regional Economic Models), Inc. http://www.remi.com/). The IMPLAN model was originally developed for the U.S. Forest Service but for many years it has been maintained and sold by the Minnesota Implan Group, Inc. (http://www.implan.com/).

The model used to produce the estimates in this report is a New Mexico specific REMI model (REMI PI+ Version 1.2.6) with 169 economic sectors. The characteristics of the REMI models are well known (Rickman and Schewer 1995; Treyz, Rickman, and Shao 1991). Briefly, the REMI models are long-run, dynamic models. The simulation period currently runs to 2050 and history data on most variables are available from 1990. The models are based on annual data. The REMI national model interacts directly with one or more regional models as shown in the following diagram.



The regional models can contain any combination of counties or county equivalents. The regional model used in this analysis is for the State of New Mexico (Version 1.2.6 updated January 2011).

While the key driver of the REMI models (national and state) is an input-output (Leontief model) derived from the national I-O model produced by the Bureau of Economic Analysis, REMI models contain more than a static I-O model. The models also incorporate Computable General Equilibrium (CGE) techniques, single year of age cohort-component population projection models, and equations based on the New Economic Geography (Krugman 1998). Additional information about REMI models can be found at the REMI, Inc. website: www.remi.com .

There are three main areas of concern in estimating local economic impacts. First, the new spending (or reduction in spending) must, in fact, be new to the geographic area being considered. The proposed FCC rule changes eliminating USF distributions to New Mexico's rural carriers meet the 'new' criterion without controversy. Second, the size of the local economy matters. In general, the smaller the local economy under consideration, the more likely it is for firms operating locally to obtain inputs from outside the area. In this report, the economic impacts are examined at the state level. Third, supply constraints in the local economy are usually important. Given the recent recession (2007 to 2009) and the relatively slow recovery both nationally and in New Mexico, excess capacity is likely to continue for several years and supply constraints are not a significant issue.

Economic Impacts

In 2010, the eleven members of the New Mexico Exchange Carriers Group participating in this analysis received $34,554,682 in USF revenue or about 32 percent of total revenue. The estimation approach taken in this report reduces the USF revenue source by the reported amount beginning in calendar year 2012. Simulations of the New Mexico REMI model were conducted over the 2012 to 2021 time frame. The REMI model is a dynamic model in which events in one year often have impacts in subsequent years. The estimated impacts reported below are presented in terms of differences from the REMI baseline forecast.

Estimated impacts are presented for employment (total, private sector, and public sector), personal income, wage and salary disbursements, and Gross Domestic Product. These terms are defined as follows:

- Employment refers to full and part-time jobs.
- Personal Income refers to income received by persons from all sources. It includes income received from participation in production as well as from government and business transfer payments. The largest component of personal income is wage and salary disbursements.
- Wage and Salary Disbursements includes both private and public sector wage and salary payments including benefits.
- Gross Domestic Product is a value added concept. Value added refers to the change in value of a product or commodity at each stage of the production process. As reported here, GDP refers to New Mexico GDP.

The impact estimates are reported as total impacts and include the direct, indirect, and induced effects of the decrease in spending due to the change in USF revenue streams. These terms are defined below and a glossary of terms is provided at the end of the report.

- Direct effects are the immediate (or first-round) consequences of a change in economic activity or policy. For example, if a firm spends $1 million on construction of a new building, the direct effect on output (sales) in the construction sector is $1 million. If 8 workers are employed on the construction of the building, then those 8 workers are also a direct effect.
- Indirect effects occur because industries purchase inputs from other industries. If a construction project requires steel beams, there will be indirect effects on iron mining and coke producing industries.
- Induced effects result from households spending the wage and salary income received by those employed directly or indirectly on the new activity.
- Total effects refer to the sum of direct, indirect, and induced effects.

The impacts are reported in Table 1.7 for four time horizons. Because both the REMI model and the economy do not behave in a linear fashion over time, it is inappropriate to use the results for a single year to extrapolate to a multi-year time-frame. The results reported here include results for a single year (2012), two five year periods (2012 to 2016 and 2017 to 2021), and a ten year period (2012 to 2021).

The estimated impacts in 2012 include the loss of 99 jobs in the telecommunications industry, 261 private sector jobs, and a total employment loss of 335 jobs. The projected loss of 99 jobs in the telecommunications industry is 19.1 percent of total employment (518 jobs) reported in 2010 by the eleven participating members of NMCEG. The implied employment multipliers are 2.64 for private non-farm employment and 3.38 for total employment. These employment multipliers reflect the fact that the telecommunications industry has strong linkages with other economic sectors. The loss in New Mexico personal income in 2012 associated with employment losses is $14.1 million or $42,985 per job.

During the five year period from 2012 to 2016, the loss of USF funding is associated with a loss of 452 jobs in the telecommunications industry, a decrease of 1,315 private non-farm jobs, and a loss of 1,696 total jobs. The five year implied employment multipliers are 2.91 for private non-farm jobs and 3.75 for total jobs. The higher employment multipliers for the five year period compared to the single year period reflect the dynamic characteristics of the model and the economy. The five-year job loss is associated with a loss of $89.3 million in New Mexico personal income or $52,653 per job.

In the second five-year period (2017 to 2021), the telecommunications industry is estimated to lose 353 jobs, private non-farm employment is estimated to decrease by 1,086 jobs, and total employment is estimated to decrease by 1,450 jobs. The smaller job effects in the second five-year period reflect industry adjustment to the loss of USF funds. The projected job losses in the second five year period are associated with a decrease in New Mexico personal income of $111.0 million.

Over the ten year projection period (2012 to 2021), the telecommunications industry is estimated to lose a total of 805 jobs or about 80 jobs per year. During this period, private non-farm employment is estimated to decrease by 2,400 jobs while total employment is projected to decrease by 3,146 jobs. New Mexico personal income is projected to decrease by $200.3 million during the ten year projection period.

The projected New Mexico tax revenue implications of the FCC proposal are presented in the next section.

Table 1.7

Economic Impacts of Eliminating Universal Service Funds in New Mexico*

		2012	2012 to 2016	2017 to 2021	2012 to 2021
Total Employment	Jobs	-335	-1,696	-1,450	-3,146
Private Non-Farm Employment	Jobs	-261	-1,315	-1,086	-2,400
Public Sector Employment	Jobs	-74	-381	-364	-745
Telecommunications	Jobs	-99	-452	-353	-805
Personal Income	Millions of $	-14.4	-89.3	-111.0	-200.3
Total Wage and Salary Disbursements	Millions of $	-13.1	-77.6	-87.2	-164.7
Gross Domestic Produuct	Millions of 2010 $	-39.4	-208.1	-212.4	-420.5

*Analysis based on 11 of 13 NMCEG Carriers

Source: REMI PI + (version 1.2.6) simulations. Differences from baseline.

New Mexico Tax Impacts

The tax revenue impacts of the elimination of the Universal Service Fund have been estimated for four broad categories of New Mexico taxes: Gross Receipts taxes (GRT), Personal Income Taxes (PIT) Corporate Income Taxes (CIT), and all other taxes. Combined, GRT, PIT, and CIT accounted for 77 percent of all New Mexico Tax revenue between 2001 through 2009. The all other tax category consists mainly of severance taxes, property taxes, and various licenses and fees. In a typical year, severance taxes account for about three-quarters of the all other tax category. The elimination of the USF should have little or no impact on severance taxes and these have been eliminated from the other tax category estimates.

The tax revenue estimates reported here are based on effective tax rates (Table 1.8) averaged over the 2001 to 2009 period. The main reason for using effective tax rates instead of statutory rates is to avoid the nearly impossible task of estimating deductions and exemptions. The effective tax rates represent the proportion of personal income actually paid by New Mexicans on average between 2001 and 2009. For the purpose of estimating tax revenue, the important issue is the stability of the effective tax rates from year to year. Labor income based effective tax rates satisfy this criterion. The variability of the effective tax rates as measured by the standard deviation of each rate (Table 1.8) is low.

Table 1.8

Effective Tax Rates (proportion of personal income)

Year	GRT	PIT	CIT	All other	Total
2001	0.0460	0.0183	0.0042	0.0198	0.0883
2002	0.0393	0.0212	0.0027	0.0151	0.0783
2003	0.0389	0.0192	0.0021	0.0147	0.0749
2004	0.0395	0.0195	0.0027	0.0159	0.0776
2005	0.0392	0.0196	0.0044	0.0177	0.0809
2006	0.0403	0.0190	0.0064	0.0206	0.0862
2007	0.0419	0.0186	0.0073	0.0197	0.0875
2008	0.0401	0.0183	0.0053	0.0213	0.0851
2009	0.0377	0.0141	0.0031	0.0185	0.0733
Mean	0.0403	0.0186	0.0042	0.0181	0.0813
Std. Dev.	0.0023	0.0018	0.0017	0.0023	0.0053

Effective Tax Rates = specified tax divided by personal income
GRT includes gross receipts and selective sales taxes.
PIT refers to personal income taxes.
CIT refers to corporate income taxes.

Source: Author computations. New Mexico Tax data from U.S. Bureau of the Census, "State Government Tax Revenue". Personal Income data from REMI PI+.
http://www.census.gov/govs/statetax/0832nmstax.html

The estimated tax impacts are reported in Table 1.9. In the first year (2012), eliminating USF would result in an estimated tax revenue loss to the state of nearly a million dollars ($978,000) with $582,000 or 59.5 percent of this figure coming from reduced GRT revenue. For the five year period from 2012 to 2016 New Mexico tax revenues are estimated to decrease by $6.053 million with $3.603 million attributed to a decrease in GRT revenue. During the ten year projection period (2012 to 2021) the estimated total tax loss is $13.569 million with $8.077 million attributed to reduced GRT revenue.

Table 1.9

Change in New Mexico Tax Revenue Associated with Universal Service Fund Elimination (Thousands of Dollars)

	2012	2012 to 2016	2017 to 2021	2012 to 2021
Gross Recipts Tax	-582	-3,603	-4,474	-8,077
Personal Income Tax	-269	-1,666	-2,069	-3,735
Corporate Income Tax	-61	-378	-470	-848
Other Taxes (Excluding Severance Taxes)	-65	-405	-503	-908
Total Tax Change	-978	-6,053	-7,516	-13,569

Source: Author Calcualtions.

Summary and Concluding Remarks

The economic impacts of the elimination of Universal Service Funds to 11 of the 13 members of the New Mexico Exchange Carriers Group have been estimated in this report. The approach taken was to reduce USF revenue in the telecommunications sector of a long range, dynamic economic model (REMI PI+). The $34.5 million reduction in USF funds was assumed to begin in 2012 and continue through 2021. The REMI model is designed to capture relationships among industries and households in a comprehensive fashion. The estimated impacts are reported as differences from a baseline projection in the REMI model.

The estimated impacts are substantial. The estimated impacts in 2012 include the loss of 99 jobs in the telecommunications industry, 261 private sector jobs, and a total employment loss of 335 jobs. Additional impacts in 2012 include reduced New Mexico personal income of $14.1 million and a decrease in New Mexico tax revenue of $978,000.

In the ten year projection period (2012 to 2021), the telecommunications industry is estimated to lose a total of 805 jobs or about 80 jobs per year. During this period, private non-farm employment is estimated to decrease by 2,400 jobs while total employment is projected to decrease by 3,146 jobs. New Mexico personal income is projected to decrease by $200.3 million during the ten year projection period and State tax revenue would decline by 13.6 million.

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Glossary

Direct effects are the immediate (or first-round) consequences of a change in economic activity or policy. For example, if a firm spends $1 million on construction of a new building, the direct effect on output (sales) in the construction sector is $1 million. If 8 workers are employed on the construction of the building, then those 8 workers are also a direct effect.

Employment refers to full and part-time jobs.

Final demand refers to the demand of ultimate consumers for goods and services. Final demand includes the demand of households, governments, inventory accumulation, and exports. See also, intermediate demand.

Gross Domestic Product (GDP) is defined as the market value of the final goods and services produced by labor and property located in the United States. Conceptually, this measure can be arrived at by three separate means: as the sum of goods and services sold to final users, as the sum of income payments and other costs incurred in the production of goods and services, and as the sum of the value added at each stage of production (chart 2.1). (Bureau of Economic Analysis, Concepts and methods of the National Income and Product Accounts, page 2-7. http://www.bea.gov/national/pdf/NIPAhandbookch1-4.pdf

Indirect effects occur because industries purchase inputs from other industries. If a construction project requires steel beams, there will be indirect effects on iron mining and coke producing industries.

Induced effects result from households spending the wage and salary income received by those employed directly or indirectly on the new activity.

Input-output model refers to a type of economic model designed to capture relationships among industries and ultimate consumers.

Intermediate demand refers to the demand of industry for the goods and services produced by other industries that will be used in the production process.

Labor income consists of employee compensation (including benefits), supplements to wages and salaries (such as employer contributions to pension funds), and proprietor's income.

Output refers to gross industry sales or expenditures depending on the consequences.

Total effects refer to the sum of direct, indirect, and induced effects.

Total Personal Income is the income that is received by all persons from all sources. It is calculated as the sum of wage and salary disbursements, supplements to wages and salaries, proprietors' income with inventory valuation and capital consumption adjustments, rental income of persons with capital consumption adjustment, personal dividend income, personal interest income, and personal current transfer receipts, less contributions for government social insurance. The personal income of an area is the income that is received by, or on behalf of, all the individuals who live in the area; therefore, the estimates of personal income are

presented by the place of residence of the income recipients. (Bureau of Economic Analysis, http://www.bea.gov/regional/definitions/nextpage.cfm?key=Total personal Income

Value added refers to the change in value of a good or service during each stage of production. Gross Domestic Product is a value added concept.

About Arrowhead Center

New Mexico State University's Arrowhead Center fosters sustainable economic development by utilizing a comprehensive approach to generate jobs, wealth, and and enhanced quality of life in New Mexico. The Arrowhead Center focuses on the interrelated activities of technology commercialization, entrepreneurship, economic studies/policy analysis, workforce analyses, research park development, and business incubation that lead to economic development. One of the Arrowhead Center's key strategies to accomplish its economic development mission is providing value-added solutions to unmet needs in the region, and to work collaboratively with other economic and business development organizations.

The Arrowhead Center performs its role through two mechanisms, as an organizational unit of NMSU staffed primarily by NMSU personnel, including faculty, staff, and students, and as a non-profit corporation established in 2004, governed by a Board of Directors. The Corporation's Board is comprised of academic, business, and economic development leaders, providing the direction necessary to focus resources across New Mexico State University elements on the challenges of economic development.

The Arrowhead Center performs wide-ranging services that contribute to the creation and expansion of small businesses in New Mexico. These services and products include:

- Business assistance, including business plan development
- Entrepreneurship education and training
- Analysis of policy issues affecting New Mexico
- Incubating businesses in the Arrowhead Business and Research Park
- Identification of labor and training needs associated with commercial enterprises
- Spin-off of commercially viable business concepts and technologies
- Protection of, licensing, and commercialization of NMSU intellectual property
- Connection of key players in the business and economic development process

The Arrowhead Center has been in existence since 2004, with rapid growth in services provided to faculty, staff, students, entrepreneurs, small business, investors, and venture capitalists. Since its inception, the Center has completed more than 200 business research projects involving more than 300 undergraduate and graduate students, fostered the spin-off of a university genetics testing laboratory resulting in a new for-profit corporation, and completed several state-level economic studies. The Arrowhead Center has exceeded expectations and continues to provide quality services to New Mexico.

Board of Directors of Arrowhead Center (As of December 2010)

The Arrowhead Center's Board of Directors is comprised of leaders from New Mexico State University and at-large members from across New Mexico. Each Director was selected for their expertise, insight, and experience critical to the mission and strategic direction of the Arrowhead Center.

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