Energy and Economic Development in New Mexico

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The NMSU Prosper Project

- U.S. Department of Energy (National Energy Technology Laboratory) Grant
- Main focus: links between fossil fuels, economic development and water
- Technical reports, presentations available at:
  - http://arrowhead.nmsu.edu/arrowheadcenter/prosper/index.html
- Sample technical reports include:
  - Oil and Gas Production and Economic Growth in New Mexico
  - The Economic Impact of Department of Energy Expenditures in New Mexico
  - Energy Market Volatility
  - Peak Oil
  - Economic Impact of Fossil Fuels (coal, oil and gas)

Re-Energize the Americas Conference

- Third annual RTA conference
- 2011 conference joint with Border Energy Forum
- El Paso Convention Center
- Sponsors:
  - NMSU (PROSPER and IEE)
  - UTEP
  - Paso del Norte Group
  - Texas General Land Office

Economic Growth versus Economic Development

- Economic growth is quantitative and fairly easy to measure
  - Economic growth does not usually imply significant structural change
    - Such as a change in industrial mix
- Economic development generally means substantial changes in industrial, social, and political structure such as:
  - Shift from agriculture to industry
  - Urbanization
- Economic development is often regarded as a threat
- Economic development often meets strong resistance

Energy and Economic Development

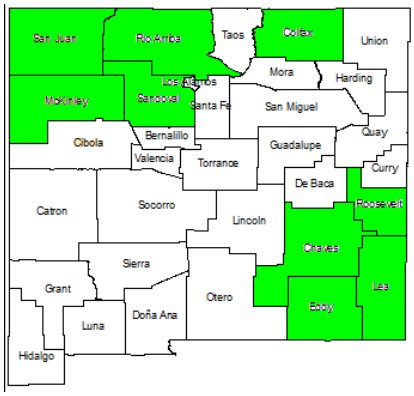
- Energy (broadly defined) has many advantages as the basis for an economic development strategy
  - The energy industry has a long history in the state
    - Experience provides comparative advantage
  - Energy industry activity occurs in all 33 counties
  - Energy is an export or economic base activity
  - Energy sectors have large income and employment multipliers
  - There is no long-run demand problem
    - (but energy market volatility is an issue)
  - NM has abundant natural resources (reserves)
  - Energy is generally a high wage industry

Disadvantages of Energy Based Economic Development

- Energy market volatility
  - Including price, output, and employment
- Long run sustainability (e.g. peak oil)
- Environmental issues
- Large capital costs

New Mexico Oil and Natural Gas Producing Counties

- Chaves
- Colfax (Natural Gas Only)
- Eddy
- Lea
- Roosevelt
- McKinley
- Rio Arriba
- Sandoval
- San Juan



Oil

- In 2009, New Mexico ranked 7th in the nation among oil producing states.

Oil Production			
Rank	**State**	**1,000s of bbls**	**% of Total**
1	Texas	403,797	29.57%
2	Alaska	235,500	17.24%
3	California	207,094	15.16%
4	North Dakota	79,736	5.84%
5	Louisiana	69,002	5.05%
6	Oklahoma	67,018	4.91%
7	**New Mexico**	**61,146**	**4.48%**
8	Wyoming	51,333	3.76%
9	Kansas	39,464	2.89%
10	Colorado	28,324	2.07%

Onshore production in 2009.
Source: EIA, Petroleum & Other Liquids.

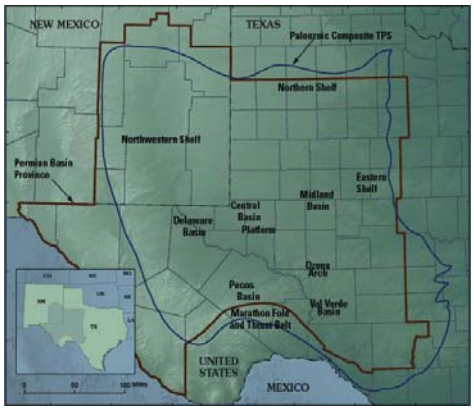
- In 2009, New Mexico ranked 5th in the nation on proven reserves of crude oil.

Oil Reserves			
Rank	**State**	**Million barrels**	**% of Total**
1	Texas	5,006	24.20%
2	Alaska	3,566	17.24%
3	California	2,835	13.71%
4	North Dakota	1,046	5.06%
5	**New Mexico**	**700**	**3.38%**
6	Oklahoma	622	3.01%
7	Wyoming	583	2.82%
8	Utah	398	1.92%
9	Louisiana	370	1.79%
10	Montana	343	1.66%

Onshore reserves as of December 31, 2009.
Source: EIA, Petroleum & Other Liquids.

Oil

- Total refining capacity in the state is 142,600 barrels p/calendar day as of 01/01/2010, this refining capacity is 0.8% of the US total.
- The Permian Basin holds three of the 100 largest oil fields in the US.



Natural Gas

- In 2009, New Mexico ranked 7th in the nation among natural gas producing states.
- In 2009, New Mexico ranked 6th in the nation on proven reserves of dry natural gas.

Natural Gas Production

Rank	State	Million Cubic Feet	% of Total
1	Texas	7,653,647	32.47%
2	Alaska	3,312,386	14.05%
3	Wyoming	2,536,336	10.76%
4	Oklahoma	1,857,777	7.88%
5	Louisiana	1,558,638	6.61%
6	Colorado	1,511,654	6.41%
7	**New Mexico**	**1,425,222**	**6.05%**
8	Arkansas	680,613	2.89%
9	Utah	449,511	1.91%
10	Kansas	355,394	1.51%

Onshore production in 2009.
Source: EIA, Natural Gas.

Natural Gas Reserves

Rank	State	Billion Cubic Feet	% of Total
1	Texas	80,424	30.65%
2	Wyoming	35,283	13.45%
3	Colorado	23,058	8.79%
4	Oklahoma	22,769	8.68%
5	Louisiana	20,688	7.88%
6	**New Mexico**	**15,598**	**5.94%**
7	Arkansas	10,869	4.14%
8	Alaska	9,101	3.47%
9	Utah	7,257	2.77%
10	Pennsylvania	6,985	2.66%

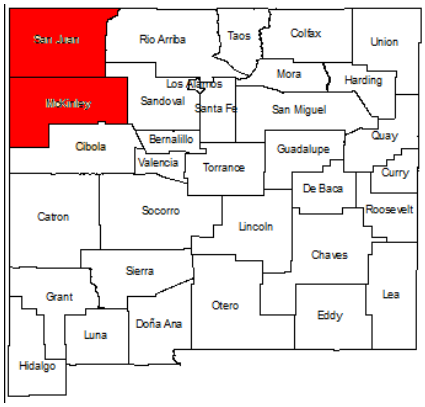
Dry natural gas onshore reserves as of December 31, 2009.
Source: EIA, Natural Gas.

Natural Gas

- San Juan Basin contains the Nation's largest field of proven natural gas reserves.
- San Juan Basin is the leading coalbed methane-producing region in the United States.

New Mexico Coal Producing Counties

•McKinley
•San Juan



Coal

- New Mexico is one of the 25 coal-producing states in the nation, ranked 12th in 2009.
- In 2009, New Mexico ranked 10th in the nation on recoverable reserves of coal.

Coal Production

Rank	State	1,000s short tons	% of Total
1	Wyoming	431,107	40.21%
2	West Virginia	137,127	12.79%
3	Kentucky	107,338	10.01%
4	Pennsylvania	57,979	5.41%
5	Montana	39,486	3.68%
6	Indiana	35,655	3.33%
7	Texas	35,093	3.27%
8	Illinois	33,748	3.15%
9	North Dakota	29,945	2.79%
10	Colorado	28,267	2.64%
11	Ohio	27,501	2.56%
12	**New Mexico**	**25,124**	**2.34%**

Includes both, surface and underground mines in 2009.
Source: EIA, Coal.

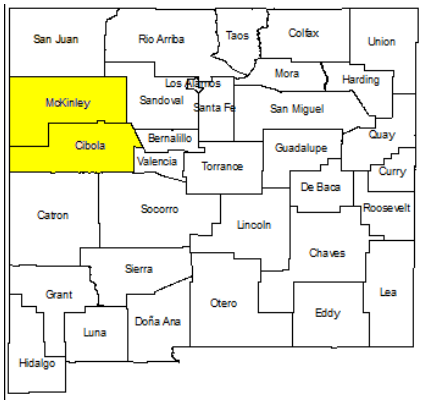
Coal Reserves

Rank	State	Million short tons	% of Total
1	Wyoming	6,917	39.58%
2	West Virginia	1,738	9.95%
3	Kentucky	1,303	7.46%
4	Illinois	1,244	7.12%
5	North Dakota	1,208	6.91%
6	Montana	855	4.89%
7	Texas	775	4.44%
8	Pennsylvania	553	3.16%
9	Indiana	403	2.31%
10	**New Mexico**	**380**	**2.17%**
11	Colorado	314	1.80%
12	Virginia	294	1.68%

Includes both, surface and underground mines in 2009.
Source: EIA, Coal.

New Mexico Counties with Uranium Reserves

- McKinley
- Cibola

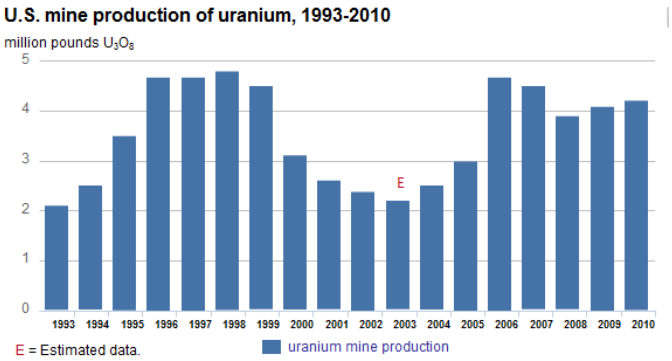


The Nuclear Industry in New Mexico

- Sandia National Labs (ABQ)
- Los Alamos National Lab (Los Alamos)
- WIPP (Carlsbad)
- URENCO (Eunice)
- International Isotopes
- Waste control specialists
- Mining ?
- Nuclear plants ?

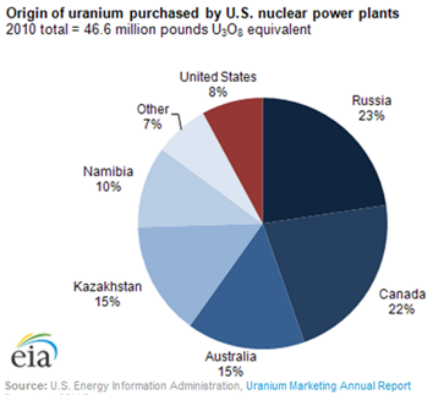
Uranium

U.S. Mine Production of Uranium, 1993-2010 ›



Source: Energy Information Administration
http://www.eia.gov/nuclear/ July 15, 2011

Uranium



Source: Energy Information Administration
http://www.eia.gov/nuclear/ July 15, 2011

Uranium

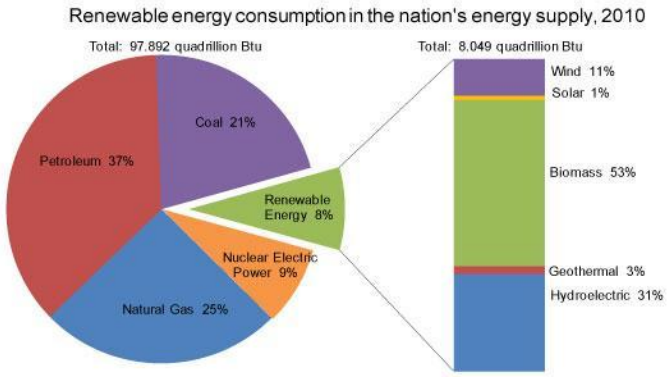
- New Mexico has the second largest identified uranium ore reserves of any state in the Nation.

Uranium Reserves

Rank	State	$100/lb - U_3O_8 (million lbs)	% of Total
1	Wyoming	446	36.32%
2	**New Mexico**	**390**	**31.76%**
3	Arizona, Colorado, Utah	198	16.12%
4	Texas	40	3.26%
5	Others	154	12.54%
	Total	1227	100%

Others include Alaska, California, Idaho, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, Virginia, and Washington.
Source: EIA, Nuclear.

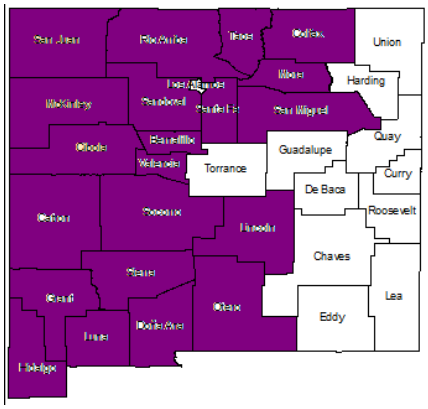
Renewable Energy Sources



Source: Energy Information Administration
http://www.eia.gov/nuclear/ July 15, 2011

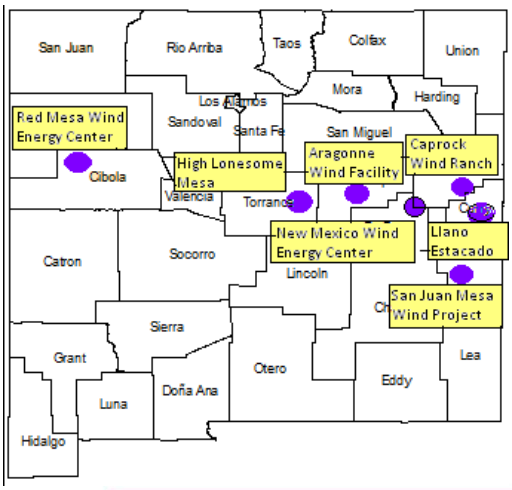
New Mexico Counties with Geothermal Potential

- Bernalillo
- Catron
- Cibola
- Colfax
- Dona Ana
- Grant
- Hidalgo
- Lincoln
- Luna
- McKinley
- Mora
- Otero
- Rio Arriba
- Sandoval
- San Juan
- San Miguel
- Santa Fe
- Sierra
- Socorro
- Taos
- Valencia



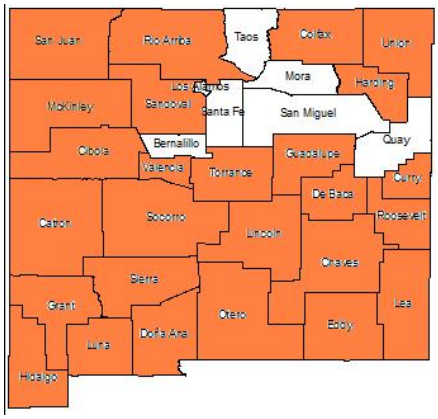
Wind

- New Mexico has a total of 698 megawatts of wind power, ranking 17th in total wind capacity installed in the US at 7 power plants.
- 5% of New Mexico power was generated from wind in 2010.

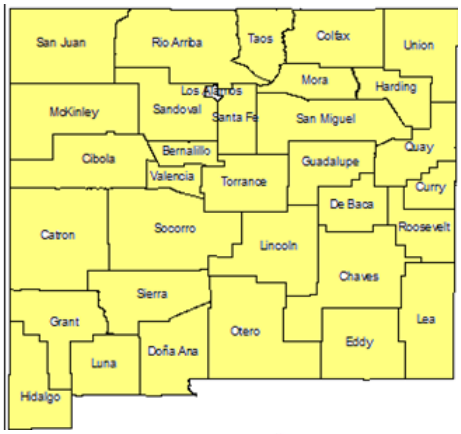


New Mexico Counties with Solar Potential

- Catron
- Chaves
- Cibola
- Colfax
- Curry
- De Baca
- Dona Ana
- Eddy
- Grant
- Guadalupe
- Harding
- Hidalgo
- Lea
- Lincoln
- Luna
- McKinley
- Otero
- Rio Arriba
- Roosevelt
- Sandoval
- San Juan
- Sierra
- Socorro
- Torrance
- Union
- Valencia



All New Mexico Counties have the potential to be involved in the energy industry



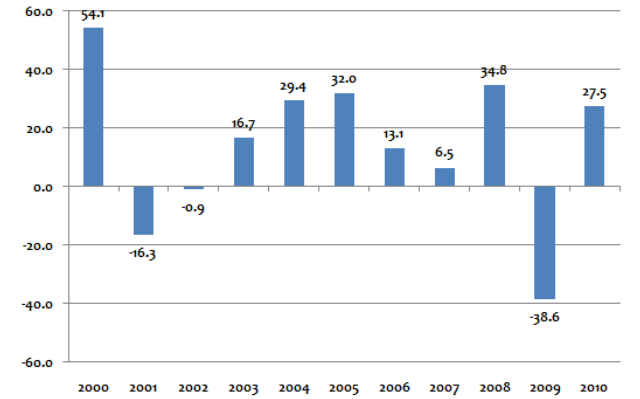
Energy Sector Employment in New Mexico

Employment in New Mexico from Energy Activities		
Industry Sector/Sub-sector	**2009**	**2010**
Oil and gas extraction (all activities)	4,181	4,505
Mining		
Coal	1,422	1422*
Uranium	-	-
Support activities	9,258	9,616
Oil and gas pipeline construction	1,786	1,666
Petroleum and coal products manufacturing	866	742
Petroleum merchant wholesalers	788	771
Gasoline stations	7,732	7,520
Fuel dealers	758	687
Pipeline transportation	222	199
Electric power generation	680	321
Electric power transmission and distribution	2,441	2,665
Natural gas distribution	875	787
Geophysical surveying and mapping services	80	103
Total Employment in New Mexico	31,089	29,582

Source: U.S. Bureau of Labor Statistics; Quarterly Census Employment and Wages
* coal mining employees in 2009 are duplicated for 2010 because they are still not reported by the EIA.

Volatility in Energy Prices

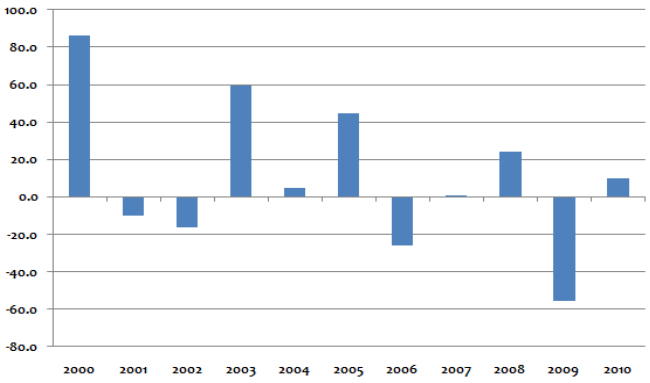
Percent Change in Real West Texas Intermediate Price



Source: Energy Information Administration, Short Term Energy Outlook, June 20, 2011

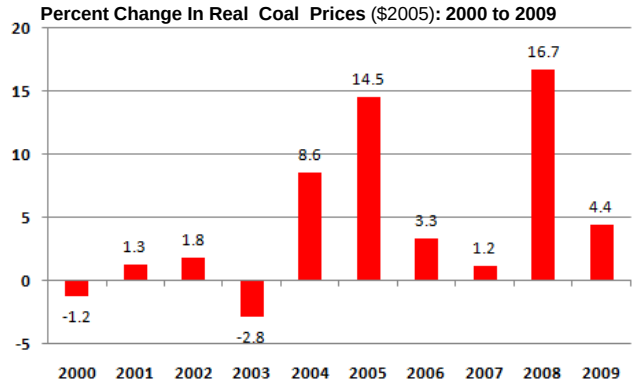
Volatility in Energy Prices

Percent Change in Real natural Gas Prices: 2000 to 2010
(Henry Hub Spot price per mmbtu)



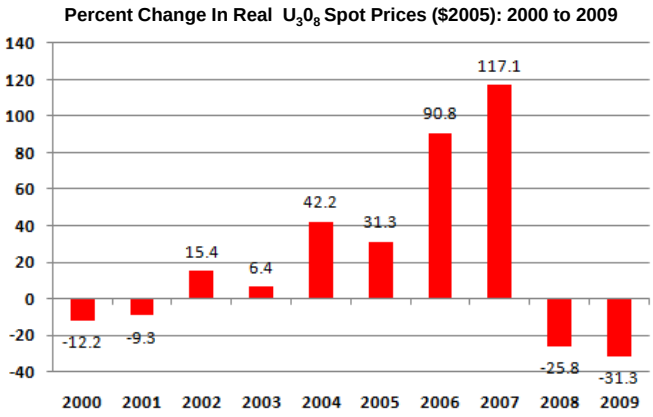
Source: Energy Information Administration, Short Term Energy Outlook.

Volatility in Energy Prices



Sources: Coal prices from EIA, Annual Energy Review (2010), Table 7.8 and GDP deflator from Bureau of Economic Analysis, NIPA Tables 1.1.9

Volatility in Energy Prices



Sources: Uranium Prices from EIA Uranium Annual Marketing Report 2010, Table S1b
GDP deflator from Bureau of Economic Analysis, NIPA Tables 1.1.9

What can the state do?
some possibilities

- Make energy a central focus of its development strategy
  - and demonstrate linkages to other sectors
- Promote New Mexico as an energy state
- Bring industry leaders together once a year
- Improve New Mexico's energy information system
  - Complete, timely, easy to use, with lots of historical data

Thank you!

Questions?

Contact:
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