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The Contribution of Energy Extraction Activities to Farm Household Wellbeing: Oil, Gas, and
Wind Lease and Royalty Income

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Summary

- In 2012, farm households reported receiving a total of \$1.8 billion in lease and royalty income from energy production activities, making up about 1% of farm household total income.
- Payments are highly concentrated, primarily on large farms and in the South and Midwest.
- Though relatively few farms have energy lease and royalty income (3 percent), it can be an important source of income, particularly for older farmers; for farmers over 65 who receive royalty income, it is the largest single source of income.

Background

Since 2000, U.S. energy production of oil, natural gas, and renewables has increased by 23 percent (US Energy Information Administration 2014), thanks largely to new technologies allowing extraction of gas and petroleum from shale deposits. Over the next 25 years, production of the three is projected to grow by 40 percent, with natural gas growing by over 50 percent.¹

[Insert map of shale play here]

In 2011 the USDA began surveying farmers about income received from royalties or leases associated with energy production (e.g. natural gas, oil, and wind turbines). This study presents the results of the 2012 Agricultural Resources Management Survey (ARMS) from the USDA and is the first comprehensive look at income to farm households from energy leases and royalties.

- In 2012, 3.3 percent of the 2 million farm households reported receiving any oil, gas, or wind (OGW) lease or royalty income, for a total of \$1.8 billion.
- Conditional on receiving lease or royalty income, the average annual payment was \$27,456 (the median was \$3,700).

Data

The ARMS data are cross-sectional and based on interviews with farm operators designed to solicit information about production practices, costs of production, business finances, and operator and household characteristics. We use *Costs and Returns Report* data, which collect financial information on the farm business and the operator's household. Royalty income includes royalties from oil, gas or wind. Royalty revenue is included in farm income.

Production profile of farms receiving royalties

¹ Measured in quadrillion Btus.

- Farms receiving royalty income are larger than farms without royalty income as measured by average gross value of sales, acreage, and farm income and farm wealth. Farm size is correlated with geographic location as farm sizes in western and southern states with relatively more oil/gas are larger.
- Nearly half of the farms receiving royalties specialized in beef cattle (48 percent). The next largest group was field crop specialists (20.4 percent). Farms with royalty income also had a significantly higher farm net worth (\$1,560,978) than those who did not receive royalties.
- More farms with royalty income receive government payments and the average payment is higher. This may be related to location, as a greater percentage of farms with royalty income specialize in major field crops. However, the difference in percentage of farms specializing in beef production is even greater among those receiving royalty payments and this would be expected to contribute to lower average government payments.
- For farms with royalty income, nearly two-thirds of the principal operators indicate their major occupation is farm or ranch work (64%), with 25% noting work other than farming/ranching and 10.5% currently not in the work force.
- A greater percentage of operators age 65 and older than younger operators have royalty income.

Table 1. Characteristics of principal farm operator households with lease and royalty receipts by level of receipts, 2012

Item	Oil, Gas, and Wind Royalty amount received					
	Less than \$1,000	\$1,000 - \$4,999	\$5,000 - \$9,999	\$10,000 - \$24,999	\$25,000 or more	All
Number of family farms	17,141	18,941	10,645	7,278	12,356	66,361
Percent of family farms	25.8	28.5	16.0	11.0	18.6	100.0
Distribution by gross value of production (%)						
Less than \$10,000	51.4	34.6	36.1	33.6	16.9	35.8
\$10,000 to \$249,999	37.5	50.6	47.6	45.3	66.2	49.1
\$250,000 or more	11.1	14.8	16.3	21.1	16.8	15.1
Farm size (mean operated acres)	408	664	1,094	1,478	2,348	1,070
Farm size (median operated acres)	124	304	350	590	1,115	304
Percent of acres	9.8	17.7	16.4	15.2	40.9	100.0
Royalty revenue (\$)						
Royalty revenue, mean	361	2,357	7,412	14,657	128,327	27,456
Royalty revenue, median	334	2,000	8,000	12,063	58,250	3,700

Source: 2012 USDA Agricultural Resource Management Survey.

Lease and royalty income is highly concentrated

- Nearly 55 percent of farms receiving royalties receive less than \$5,000 annually, while 18 percent receive more than \$25,000.
- Although about three percent of all farms receive income from leases and royalties, the payments are concentrated on a very small minority of farms.
- When we consider all farms, 0.1% of farms receive half of all royalty payments, while 1% of all farms receive 90% of all royalty payments.

If we look at concentration of payments among those who receive payments:

- 3% of farms receive 50% of all royalty payments
- 23% of farms receive 90% of all royalty payments
- Half of all royalty income goes to farms receiving at least \$200,000 in lease and royalty payments

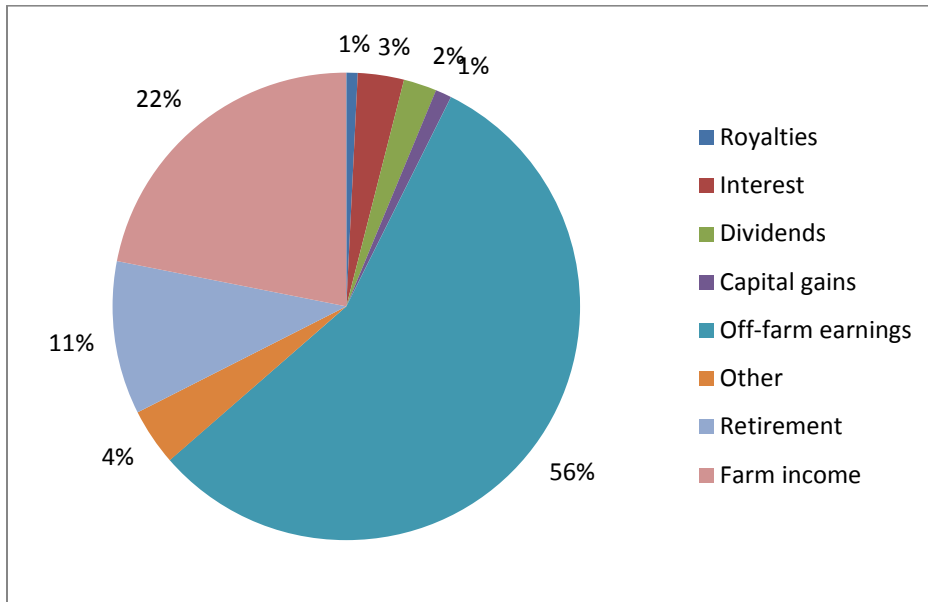
Lease and royalty income in the top ten active-well states

- Two-thirds of farm households that received royalty payments were located in the 10 states with the greatest number of active oil or gas wells, and they accounted for 83% of total royalty payments.
- About 6% of farms located in the Top Ten active-well states received royalty income, double the percentage nationally, for a total of \$1.5 billion for 2012 (See map 1).
- Conditional on receiving royalty income, the average royalty was \$35,015. Total farm household income averaged \$159,937 (median \$77,125).
- The average size of a farm receiving royalty income was 960 operated acres (median 304), far larger than the average farm in the U.S.
- Receipt of royalty income was more likely to accrue to older farmers (61 years old on average). In fact, in these states, 40% of farms receiving OGW royalties were 65 years old or older.
- The farms receiving royalty payments tend to be wealthier than other farms, with an average household net worth of over \$2 million.
- The majority of the farms are in the South (51%), primarily Texas, Oklahoma, Louisiana and Arkansas.

The impact of oil, gas or wind lease and royalty income on household wellbeing

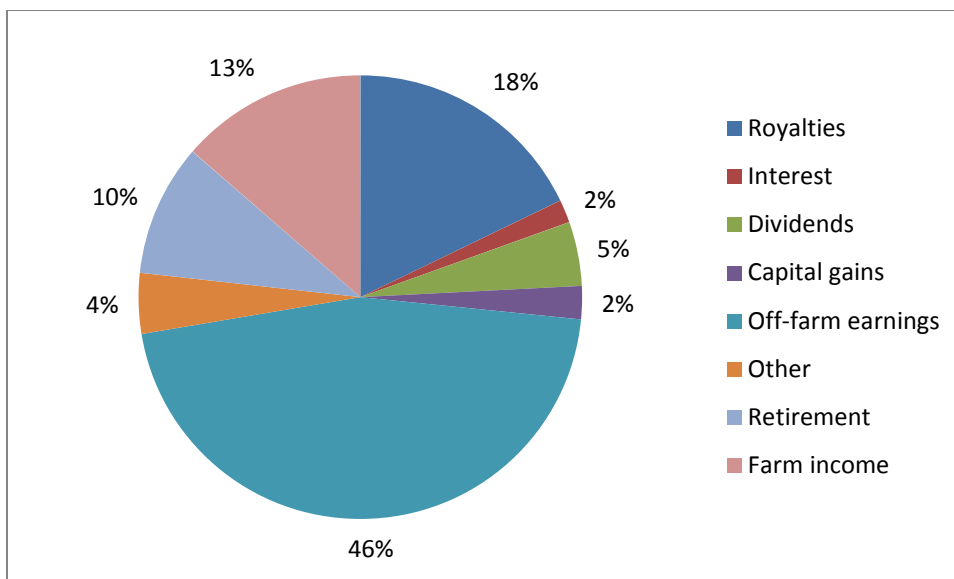
In the farm sector overall, royalty receipt is not a large source of income. Total royalty income was about 3 percent of the \$52.8 billion total farm operator income. Royalties represent less than 1 percent of farm household total income from all sources.

Royalty income compared to other income sources—all farm households, 2012



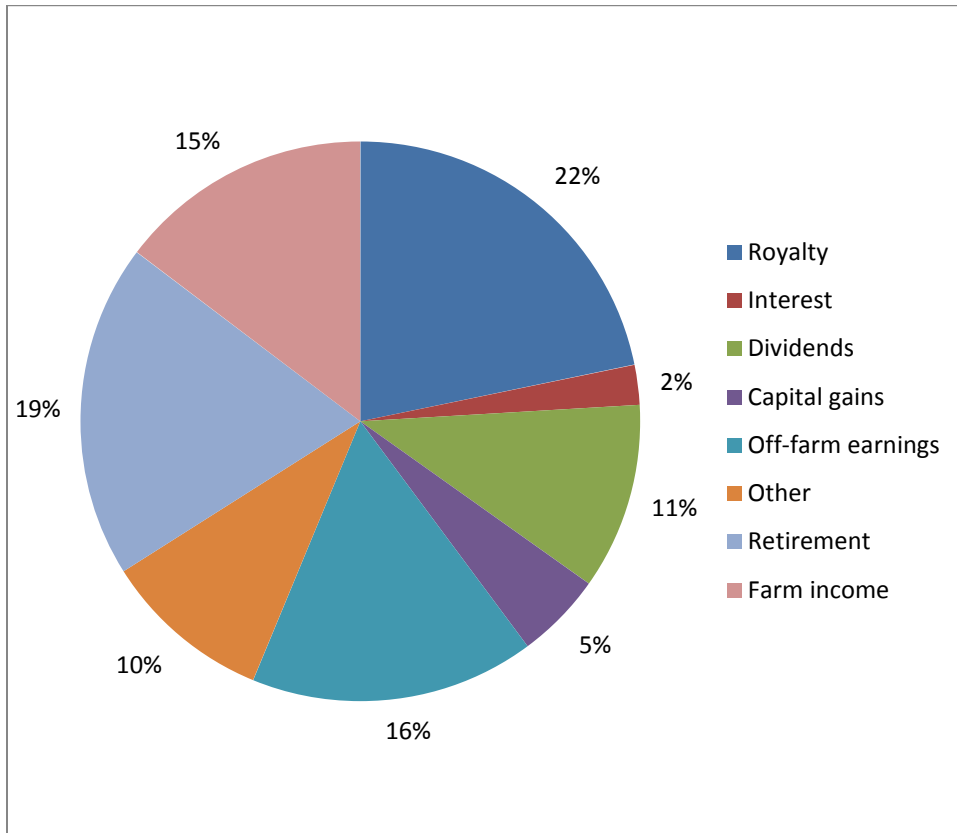
For those who receive lease and royalty income, it is a more important source of income, representing 18.3% percent of total farm-household income.

Royalty income compared to other income sources—farms receiving royalties, 2012



One finding that stands out is that among those who receive lease and royalty income who are 65 years or older, it is the single largest source of income. It is three percentage points greater than what is traditionally defined as retirement income and 7 percentage points greater than farm income.

Royalty income compared to other income sources—principal operators 65 or older who receive royalties, 2012



Conclusion

- Based on analysis of 2012 ARMS data, we find few farms (3%) receive income from mineral extraction or wind energy production, and in general the payments are concentrated on a small minority of farms.
- One reason for the small number could be that the mineral rights were long ago separated from the land and sold by the farmer or by a previous owner of the land, and therefore do not produce a stream of payments to the current owner. However, due to limitations of the data we do not know this. We only know what they reported as income in the survey year, which could include proceeds from ongoing production or a one-time payment made at the initiation of the lease (bonus payment), or both.
- Nevertheless, among those who receive royalty income, it can be an important source, particularly for older farmers.

References

U.S. Energy Information Administration, U.S. Department of Energy. Annual Energy Outlook 2014 with projections to 2040. DOE/EIA-0383 (2014). April 2014.

Map 1.

Producing Oil and Gas Wells in the United States, Including Offshore

