

**Unanswered Questions About  
The Economic Impact of Gas Drilling  
In the Marcellus Shale:**

**Don't Jump to Conclusions**

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## **1. Introduction**

In light of the undisputed potential for environmental harm from gas drilling in the Marcellus Shale, the principal reason advanced for taking the environmental risks is the positive economic impact that such drilling could have for New York State and its counties. However, there has been so little actual, current, unbiased examination of the economic impact that it is fair to say that positive economic impact is more an assertion than a proven fact. It is possible that the net economic impact may be negative for New York State and its counties.

The studies used to support the claim that drilling will bring economic benefits to New York are either biased, dated, seriously flawed, or simply not applicable to the region that would be affected. Such studies are not a valid foundation on which to base legislative or regulatory actions.

The unsupported assumption of a net economic benefit from gas drilling in the Marcellus Shale is largely based on anecdotal experience and studies from other gas producing states. Decision-makers in New York should be warned that the economies of New York State and the affected counties are different enough from those of other regions with gas drilling that an independent and thorough analysis of the economic impact in New York should be undertaken before decisions with irreversible consequences are taken.

## **2. Brief Background on Economic Impact Studies of Gas Drilling and Multipliers**

Many of the studies of the economic impact of gas drilling have been based on input-output analysis. Such analysis does not properly account for costs of environmental degradation, damage and general wear and tear to infrastructure, health effects, pollution's impact on other industries such as tourism and hunting and fishing, and the impact on property values.

Input-output analysis relies on tables of coefficients that link one industry to all other industries. In a region where gas drilling has not existed in the past, it is impossible to know what those inter-industry coefficients will be, and "borrowing" them from other regions or industries is likely to result in highly inaccurate impact conclusions.

In addition to input-output coefficients, economic multipliers are sometimes also "borrowed" from other industries and regions, and may not be accurate for gas drilling in upstate New York. It is difficult to compare multipliers as they vary widely by region and by industry, but some general comparisons do hold. In an area with great industrial diversity, multipliers are relatively high. An industry that uses materials and labor primarily from within the region will have a relatively higher multiplier than an industry that buys its services and supplies from outside the region. The region could be defined

as a state, county, multi- state area or sub-county area, and these differences in multipliers still apply. If an industry is in a large urban area, its multipliers are generally higher as greater amounts of industry spending remains in the area. Small and/or rural areas tend to have lower multipliers, since an industry must use services and supplies from firms outside the area. So, when applying a multiplier to estimate economic impact, much care should be taken to reflect the economic character and industry diversity of the region being analyzed.

If the anticipated growth in jobs and income in the oil and gas industry does not occur, then the desired indirect and induced economic impacts will not occur, and local and state tax revenues will not grow as hoped. If newly created jobs are filled by non-permanent and transient workers, then both income tax and retail tax revenue will be lower than anticipated. Likewise, as many of the established support firms for the oil and gas industry are not located in New York State, corporate tax revenue will be less than anticipated. The imposition of a substantial severance tax should be considered in New York State not only to ensure that the state will have some revenue to use for mitigation of environmental, health and infrastructure degradation, but also to ensure some revenue to the state in the likely event that the overall economic impact is not as substantial as is currently being assumed.

Decision makers may be on the verge of making bad choices for the health of the regional economy. The oil & gas industry is not a reliable industry on which to base an economic development plan. Alan B. Krueger, Chief Economist and Assistant Secretary for Economic Policy at the US Department of Treasury, stated, “The oil & gas industry is about ten times more capital intensive than the US economy as a whole.” Krueger continues, saying that encouraging oil and gas production is not an effective strategy for creating jobs. (Remarks of Alan B. Krueger to the American Tax Policy Institute Conference, October 15, 2009).

The following sections provide a summary of unanswered questions and concerns regarding specific studies and anecdotal evidence of economic impact of gas drilling. The studies referenced have been cited by advocates of gas drilling in the Marcellus Shale. The purpose of this survey report is to encourage decision makers to be cautious and insist on credible economic analysis prior to committing to gas drilling and its potential negative effects.

### **3. New York State’s Experience with Gas Drilling Does Not Support the Assumption of a Positive Economic Impact**

According to the 2008 Annual Report of the Division of Mineral Resources of the New York State Department of Environmental Conservation, the top 10 gas counties in New York State are Steuben, Chemung, Chautauqua, Erie, Seneca, Cattaraugus, Schuyler, Tioga, Cayuga, and Genesee Counties. The following table, taken directly from the

Annual Report, shows gas production levels and number of wells in these counties in 2008.

**Gas Activity in the Top Ten Gas Counties (2008)**

	Gas (mcf)	Active Gas Wells
Steuben	17146368	69
Chemung	15626276	43
Chautauqua	6758069	3438
Erie	1961665	961
Seneca	1606948	214
Cattaraugus	1593604	528
Schuyler	1060947	18
Tioga	1038093	1
Cayuga	838287	291
Genesee	767032	519

In these ten counties, total non-farm employment in 2007 (the most recent year for which these employment data are available from County Business Patterns) was 607,037 and employment in the oil & gas extraction industry in the same counties totaled to 206, or only 0.03% of total non-farm employment. (Note that only three of these counties, Chautauqua, Erie and Cattaraugus, had large enough employment numbers in this industry to be reported.) When considering annual payroll in this industry, the story is similar with only 0.04% of total annual non-farm payroll in these counties attributed to the oil & gas extraction industry.

Even if it is assumed, despite evidence to the contrary from employment data, that these top ten gas counties are New York State’s most “energy focused” counties, it is informative to do a quick review of the economic condition of these counties. A comparison of the economic health of these counties relative to nearby New York State counties shows that the so-called gas counties are not faring any better than the nearby non-gas counties. The following tables show Percent of Families Below Poverty Level, Median Household Income, Percent of the Labor Force Unemployed and Per Capita Income for each of these counties.

There does not appear to be a significant difference in these measures of economic condition between the “gas” counties and the non-gas counties.

**Economic Health of New York's Top Ten Gas Counties (2006-2008)**

	<b>% of families below poverty</b>	<b>Median Household Income</b>	<b>% of Labor Force Unemployed</b>	<b>Per Capita Income</b>
<b>Steuben</b>	8.8	43662	6.8	22901
<b>Chemung</b>	12.4	41611	6.6	22759
<b>Chautauqua</b>	12.7	39865	7.3	21041
<b>Erie</b>	9.9	46814	6.2	26347
<b>Seneca</b>	9.5	45018	5.4	21566
<b>Cattaraugus</b>	11	41942	7.2	20668
<b>Schuyler</b>	NA	NA	NA	NA
<b>Tioga</b>	7.4	51135	6.3	24905
<b>Cayuga</b>	8.4	48991	5.6	22849
<b>Genesee</b>	8.9	48509	6.7	22598
<b>MEAN</b>	<b>9.9</b>	<b>45283</b>	<b>6.5</b>	<b>22848</b>

Source: American Community Survey

**Economic Health of Five Nearby Counties (2006-2008)**

	<b>% of families below poverty</b>	<b>Median Household Income</b>	<b>% of Labor Force Unemployed</b>	<b>Per Capita Income</b>
<b>Allegany</b>	11.4	41000	8.6	19393
<b>Chenango</b>	8.5	44202	6.3	22925
<b>Wyoming</b>	9.1	50022	6.3	20619
<b>Livingston</b>	7.6	52049	3.8	22230
<b>Yates</b>	10.3	43428	4.6	22130
<b>MEAN</b>	<b>9.4</b>	<b>46140</b>	<b>5.9</b>	<b>21459</b>

Source: American Community Survey

## **4. New York State Has Not Studied the Potential Economic Impact Sufficiently to Assume That There Will be a Net Economic Benefit**

Both the economic analysis relied upon by the Draft SGEIS and the economic impact study that was commissioned by Broome County are seriously flawed.

### **The Draft SGEIS**

The recent Draft SGEIS does not include an updated economic analysis. The DEC appears to be relying on economic analysis that was done in January 1988. No decisions should be based on such outdated analysis. The economy, spending patterns, natural resource prices and volatility, available financing and a myriad of other factors relevant to calculating gas drilling's economic impact have changed dramatically in the last 22 years. And the oil and gas industry of the 1980s is very different from that of today. The analysis of 1988 seemed to focus predominantly on the oil industry. The economic impact assumptions made in the Draft SGEIS do not reflect the most recently available input/output tables, so the multipliers are likely outdated as well. Any economic impact analysis that is worthy of forming the basis for consideration of laws and regulations must be updated to reflect the current market and economy, and it should reflect accurately the actual industry and product being considered.

The outdated report states that the multiplier effect is 1.4, meaning that for every \$1.00 of well/drilling output, \$1.40 is contributed to the State's economy through both direct and indirect effects. The report states *"the reported earnings multiplier of 1.4 for the oil and gas industry in New York is lower than many manufacturing and service industries, partly because the industry as a whole is not labor intensive, and also because most of the companies which provide services to the industry in New York are headquartered in nearby Pennsylvania."* If an updated economic impact analysis were to find a similar multiplier, then it would appear to make more sense to encourage an alternative industry that would provide a greater economic impact in the Catskills and in New York State generally, such as the tourism industry which is labor intensive and has been growing in the Catskills. There is a serious question as to whether gas drilling and tourism can co-exist. It may well be an "either/or" choice. The greater multiplier effect of other industries may well render gas extraction a poor alternative for economic benefit.

Tourism is not the only alternative. The "Broome County, New York, Agricultural Economic Development Plan" of 2001 shows a multiplier of 2.28 for agricultural crops, and that study concludes that farming should be encouraged for economic development of the county. If an updated and more accurate analysis were to conclude that the multiplier effect of gas drilling is as great as or greater than that of other industries, then there may be an economic reason to encourage gas drilling. The analysis done to date indicates that based on economic impact alone, gas drilling should not necessarily be encouraged, particularly if the adverse environmental effects of gas drilling could

prejudice other industries, such as tourism, outdoor sporting, and organic farming, several of which might in fact have higher multipliers.

In addition, while the 1988 report mentions environmental issues, it makes no attempt to value them. The report states,

*Unfortunately, it is difficult to assign precise monetary values to aesthetic benefits such as the beauty of an unspoiled wilderness. The monetary value for improvements in such areas as clear air, clean water, and clean soil are easier to estimate and assign by using parameters such as increased property value, decreased health care costs, increased recreational and tourist use, and improved production from forestry, fishery and agriculture.*

One should question why no attempt was made to estimate some of these parameters. A thorough analysis should evaluate each of these. The report even states, *“Most experts in this field agree that in most cases it is much cheaper to prevent pollution than to restore the environment after it has occurred.”*

Clearly, the economic impact analysis performed in 1988 and reflected in the 1992 GEIS is incomplete and inaccurate for application in 2010 and beyond.

An additional worrisome economic impact issue is the fact that multiple times in the SGEIS, the New York State DEC calls for action by local governments. For example, the DEC expects municipalities to monitor the DEC website, to be pro-active in completing road system integrity studies, to attain road-user agreements, to have county health departments undertake drinking water well investigations, etc. The costs of such activities at the local level may be substantial, and they have not been included in any of the economic impact studies or estimates.

The Draft SGEIS itself, in Chapter 7, has suggested adding more than 150 new tasks to the workload of the DEC. The costs of such tasks should be considered in an economic analysis.

Several studies (in addition to the State’s outdated 1988 study) are referenced in the SGEIS, and each has serious deficiencies, some of which are summarized in the following pages.

## **The Broome County Study**

A study commissioned by Broome County, “Potential Economic and Fiscal Impacts from Natural Gas Production in Broome County, New York”, fails to adequately address a number of factors that must be carefully considered in order to make informed decisions regarding gas drilling in Broome County.

The analysis does not appear to take account of the economic cost of building and repairing infrastructure due to the wear and tear on the roads, public buildings and other structures. This can be a significant expense for rural towns. The “River Reporter” indicated that as a result of the Millennium Pipeline, the small Sullivan County town of Cohecton suffered road damage in excess of \$1million, a large sum for such a small town, with population of only 1328 (as of the 2010 Census). While the Millennium Pipeline followed a single path, multiple well sites spread throughout a town could have an even more devastating impact on infrastructure.

The analysis does not address the cost of mitigation as a result of environmental damage, including but not limited to drinking water contamination and fish kill. The Community Science Institute of Ithaca, New York, estimated that anywhere from 1 to 5% of water wells that are in the vicinity of gas wells will become contaminated. The Penn State Cooperative Extension put the figure at 8%.

While the study touts the use of input-output models, and such models are typically used to estimate economic impacts (including direct, indirect and induced impacts), these models do not capture economic impacts that result from environmental damage or natural resource use, so the positive economic impacts estimated in this analysis of Broome County are, at the very least, exaggerated. The actual net economic impact may, in reality, be negative.

Full economic costs to the region, such as the potential for a decline in property values and an increase in health costs, are not reflected. In fact, the assumption in this report seems to be that property values will increase. It is quite possible that the reverse would occur as many well workers are transient and non-permanent, and existing residents may be driven out due to an increasingly industrial landscape. Far fewer retirees will choose to settle and second home- owners would certainly be vastly reduced in number. Another negative impact on property values is the recently publicized fact that mortgages may not be available for leased land or even for land that is nearby leased land. A thorough study would also try to identify how many of the drillers are multinationals who do not pay full income tax rates in the States.

Declines in other industries are not reflected in the net economic impact. The tourism industry would be negatively affected, as well as the sport hunting and sport- fishing industries, due to both the declining natural beauty of the area, increased environmental damage, and the potential declines in fisheries and wild game.



The analysis focuses on a 10-year horizon that seems to be the expectation for gas extraction in the Marcellus Shale, and it ignores the longer term. This is a myopic view. What happens to the regional economy when the gas is gone in 10 years and the land and streams, etc. are polluted?

The analysis uses the IMPLAN input-output model, which by its construct assumes that all of the population (new and old, and low income and high income) would have identical patterns of spending. Such an assumption overestimates the multipliers and the resulting economic impact if the new employees are part-time residents or have their families staying in other areas, which is not uncommon for gas drilling workers.

Several important and potentially negative economic impacts are not directly quantifiable, but this makes it even more important to be sure that they have been considered as carefully as possible.

It is important to postpone any decision-making regarding gas drilling in Broome County until all of the potential environmental AND economic impacts are considered.

It is interesting to note that The Broome County Legislature adopted an Agricultural Economic Development Plan in December, 2001. It was prepared by [Cornell Cooperative Extension of Broome County](#) and the Broome County Department of Planning and Economic Development with the help of [Shepstone Management Company](#). Three sections (Sections 13\3, 1.6. and 1.10) taken directly from the Agricultural Economic Development Plan for Broome County are provided below to show the inconsistencies between encouraging gas drilling for economic development and the economic development plan that Broome County had already adopted in order to preserve the pristine environment while at the same time enhance economic development.

***1.3 Income from agriculture goes further than other sectors in helping the economy.***  
*Agriculture produces much higher economic multipliers than any other sector of the Broome County economy. A report entitled "Economic Multipliers and the New York State Economy," (Policy Issues in Rural Land Use, Cornell Cooperative Extension, December 1996) indicates dairy production, for example, enjoys a 2.29 income multiplier compared to 1.66 for construction, 1.48 for services, 1.41 for manufacturing and 1.40 for retail and wholesale trade. Crops produce a multiplier of 2.28 and nursery and wood products yield 1.78 times sales. Applying these multipliers indicates agriculture represents a total contribution to the economy of approximately \$55,000,000, not including forestry enterprises, many of which take place on farms and all of which are part of agriculture.*

***1.6 Farms create rural character and attract tourism.***  
*Farms contribute to Broome County's rural character and protect open spaces essential to the quality of life for both permanent and seasonal residents. Any number of surveys of rural residents and second-home dwellers indicate the primary reasons people live in such areas have to do with their appreciation of the natural resources and open spaces offered, but the anecdotal evidence is perhaps even stronger and local tourism brochures*

*provide examples. They include references not only to the County's recreational opportunities but also its "scenic beauty." They also speak of the "quiet valleys," "enchanted villages" and "quiet country settings" throughout the County as attractive features for visitors. These facets are directly created by working farm landscapes in many instances. They help support some 217 bed and breakfast rooms offered throughout the County. There is, indeed, a direct relationship between farming and the attractiveness of Broome County as a place to both live and visit.*

***1.10 Farmland is an invaluable resource for future generations.***

*Farmland is a valuable future resource for the County in providing for a healthy and plentiful local supply of food products and generating new sources of farm income. Urban residents of the County, as well as visitors, are seeking locally grown fresh fruits, vegetables and flowers, both organic and non-organic. A local organic pork producer also markets products over the Internet. The presence of five operating farmers markets (Binghamton, Deposit, Endicott, Johnson City and Vestal) in the County demonstrates just how important this activity is.*

It is clear that gas drilling would have a devastating effect on the agricultural, sporting and tourism industries in Broome County. If Broome County legislators encourage gas drilling, then they will be working counter to their economic development plan.

## **5. The Experience of Gas Drilling in Pennsylvania Does Not Support the Assumption of a Positive Economic Impact for New York State**

There has been mention of extensive economic activity created in Pennsylvania due to the gas drilling industry. Publicly available data do not appear to support this claim.

In Pennsylvania, employment (or number of jobs) has not increased dramatically in the oil & gas extraction industry from 2001 through 2007. In fact, there was a gradual increase in oil & gas extraction industry employment from 2001 to 2004, a drop in 2005 and then a gradual increase in 2006 and 2007, but by 2007, employment in this industry in Pennsylvania did not reach the prior high of 2004.

Also, as a percentage of total state employment, employment in the oil & gas extraction industry has not changed very much. It was a lower percentage of total employment in 2007 than it was in 2003 and 2004. The following data that show these findings are from the US Census Bureau's County Business Patterns database.

Pennsylvania Oil and Gas Extraction Industry Employees as a percentage of total number of employees in the State.

2001	0.03%
2002	0.03%
2003	0.07%
2004	0.07%
2005	0.04%
2006	0.04%
2007	0.05%

Pennsylvania Oil and Gas Extraction Industry Annual Payroll as a percentage of State-wide annual payroll:

2001:	0.04%
2002:	0.05%
2003:	0.1%
2004:	0.1%
2005:	0.06%
2006:	0.07%
2007:	0.07%

Employment in Oil and Gas Extraction Industry in Pennsylvania:

2001:	1567
2002:	1754
2003:	3566
2004:	3667
2005:	1809
2006:	2093
2007:	2695

To put these numbers in perspective, as of January 2010, the total number of Walmart employees in Pennsylvania was 48,777, and the tourism industry has approximately 400,000 jobs in the state.

In order to identify energy intensive counties in the state, data for the following counties were reviewed: Lycoming, Fayette, Washington, Susquehanna, Greene, Clearfield, Indiana, Wayne, Wyoming and Columbia. As of 2007, Indiana County had the greatest number of employees in the oil & gas extraction industry and that county had only 316 employees, out of 28,613 employees county-wide. This does not indicate an “oil & gas intensive” county.

## **The Penn State Study**

There have been many references to the Penn State Study. The title of this study is “An Emerging Giant: Prospects and Economic Impacts of Developing the Marcellus Shale Natural Gas Play”. It was prepared for the Marcellus Gas Committee, made up of corporations in the gas industry, and therefore, a highly biased group. The member companies provided the underlying data for the study. The report is an exercise commissioned by the natural gas industry to try to prevent the State of Pennsylvania from imposing a severance tax on natural gas. An intelligent lawmaker should not take this study seriously. It dismisses very real concerns regarding environmental damages and ignores significant economic costs, all to make an argument against a severance tax, which could help to mitigate some negative effects.

## **6. The Experience of Gas Drilling in Texas Does Not Support the Assumption of a Positive Economic Impact for New York State**

In addition to Pennsylvania, Texas is often referenced as an example of positive economic benefits resulting from gas drilling. The Barnett Shale in Texas is said to be geologically similar to the Marcellus Shale and the same technology, horizontal hydraulic fracturing, is used there.

One study, done by the Perryman Group, boasts of tremendous positive economic impact resulting from gas drilling in the Barnett Shale. The source of funding for the study and the source of the underlying data for the study are both unclear. Unlike serious, professional studies, data sources are not identified. The charts in the report simply state “Source: The Perryman Group”. Surely, at a minimum, New York State decision makers should uncover the data and funding sources for this study prior to assuming that such an estimated impact is realistic. The econometric model used in this study was developed by the Perryman Group, but there is not a clear discussion of the track record of this model. Economists who develop models used for forecasting are expected to provide some evidence of the accuracy of the model for forecasting. This is often done by generating “backcasts” to compare actual to forecast values. No such verifications are provided or referred to.

Mayor Calvin Tillman of Dish, Texas has recently come to upstate New York to share his experience and make sure that New York is aware of the devastating environmental and health impacts that Dish has experienced as a result of gas drilling in the Barnett Shale.

Regarding economic impacts, he states a job creation number that is similar to that reported by the Perryman Group. In preparation for his visit to New York, Mayor Tillman stated “Just a couple of years ago the Barnett Shale added 10 billion dollars and 100,000 jobs to the economy for the State of Texas.”

It is not obvious that publicly available employment data from the Bureau of Labor Statistics support such a claim. According to the Bureau of Labor Statistics, the 2009 number of employees nationwide in Oil and Gas Extraction is 161,600. It's unlikely that 100,000 of those jobs were just recently added to the state of Texas as a result of the natural gas industry alone.

Perhaps Mayor Tillman's impressive estimate of job creation in Texas is coming from the combination of related industries and from jobs created as a multiplier effect, or perhaps they are taken from another economic impact study conducted by the gas drilling industry. The publicly available, unbiased employment data do not support them. The Perryman study breaks down the jobs numbers as follows: 31,803 in pipeline development, 19,015 in Royalty and Lease Payments, and 60,314 in Exploration and Drilling, for a total of 111,131 jobs in 2008. Where do these numbers come from? They do not appear to be confirmed by publicly available jobs data and the Perryman study does not cite data sources. Is it possible that these numbers were simply provided by the gas industry?

Even if there is a large positive economic impact in Texas, comparing Texas to New York is comparing apples to oranges for the purposes of estimating economic impacts from gas drilling. Texas has a labor force with the requisite skill sets. The rural counties in upstate New York would have to import the labor, who in many cases will be temporary and transient, and most of their income will be spent in their home states (probably not in New York), greatly reducing the multiplier effect in New York State relative to Texas. In addition, Texas has a very large support industry network for oil and gas activities with all requisite machinery, equipment, etc, many of which are probably manufactured there or at least distributed and contracted for there. Note also that the major gas companies are not headquartered in New York (for example, Chesapeake Energy is in Oklahoma City and XTO is in Fort Worth). New York would have to import most gas industry services, machinery, equipment, and management, and much of this would probably come from established businesses in other states such as Texas, so it is even possible that Texas would derive greater economic benefit from drilling in New York State than would New York.

In addition, the economy in the Barnett Shale area is more vibrant than the economies of upstate New York, as it is all in part of the Dallas-Fort Worth Metroplex. In fact, the Perryman Study states that "prior to the emergence of the Barnett Shale, Fort Worth had established itself as one of the largest cities in the state and a major contributor to overall business prosperity. It is also a central part of a dynamic urban region that recently exceeded six million in population. The Barnett Shale is like 'icing on the cake' for an area already performing quite well." The counties in upstate New York where gas drilling may take place cannot be described in this way. As noted above, multiplier effects of any industry are greater in more developed areas, such as the Dallas-Fort Worth Metroplex, having greater industrial diversity.

Finally, Texas has a much warmer climate that retirees enjoy. This may mean that if local landowners "get rich" from natural gas in the Barnett Shale, they are more likely to stay put in their vibrant area, where they can simply buy or build a bigger house. On the other hand, in the Marcellus Shale region in New York, it is possible that many of the local landowners who "get rich" from natural gas will move to Florida or other points south, taking their new-found wealth and spending with them, thus reducing not only property values in the Marcellus Shale region, but also local spending, possibly resulting in a negative economic impact.

It is very likely that the economic impact resulting from more gas drilling in New York State would be less than the economic impact resulting from more gas drilling in Texas.

## **7. The Experience of the Western States Does Not Support the Assumption of a Positive Economic Impact for New York State**

An independent study of the experience in Western states is "Fossil Fuel Extraction as a County Economic Development Strategy: Are Energy-focusing Counties Benefiting?" prepared by the firm, Headwater Economics. It was released in September 2008. Note that Headwater Economics is an independent non-profit firm, not supported by the gas industry or by advocates of stopping gas drilling. This study analyzed the economic health of counties in Western states in order to compare the economies of counties that focused on fossil fuel extraction as a strategy of economic development to the economies of counties that did not focus on such industries. The conclusions are that "while energy-focused counties race forward and then falter, the non-energy peer counties continue to grow steadily...Counties that have focused on broader development choices are better off, with higher rates of growth, more diverse economies, better-educated populations, a smaller gap between high and low income households, and more retirement and investment income."

## **8. Conclusion**

The entire Marcellus Shale region in New York may be at risk both economically and environmentally. While the environmental risks have been a focus of concern, many stakeholders have assumed that a positive economic impact would result. In reality, the economic impact may very well be negative. And the likelihood is that gas drilling would adversely affect other economic activities such as tourism and sport fishing and hunting. To some extent gas drilling and these other industries are likely to be mutually exclusive. The net effect is what must be considered.

It is important for decision makers in New York State to act responsibly and insist on thorough, relevant and unbiased analyses prior to making the bold and possibly inaccurate assumption that gas drilling in the Marcellus Shale will result in positive net economic benefits to New York State and its counties.

As decisions regarding gas drilling in the Marcellus Shale have potentially severe and in some cases irreversible consequences in the form of health, environmental and infrastructure degradation, it is imperative that all of the possible economic impact outcomes be fully understood.

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