Frequently Asked Questions about the Economic Study

1. Who is performing the economic study?

The Maryland Department of the Environment (MDE) entered into an agreement with the Regional Economic Studies Institute (RESI) at Towson University to perform the study.

2. How much is MDE paying for the economic study?

The agreement calls for a fixed price of $150,000.

3. When will the economic study be completed?

The schedule calls for RESI to deliver the final report in May 2014.

4. What are the broad goals of the economic study?

RESI will examine the potential economic, fiscal, and community impacts of Marcellus Shale drilling on Western Maryland's economy.

5. Will the economic study consider the effect of drilling activity on the current economy?

Yes. RESI will gather information about the impact drilling might have on tourism, outdoor recreation, and the second home market. The study will look at potential impacts to tourism and property values as follows:

- *RESI is reviewing existing tourism studies and gathering visitation figures pre- and post-drilling for regions similar to Western Maryland, which includes interviewing communities in Pennsylvania and West Virginia to quantify the potential impacts of gas development activity on visitation. RESI will determine the change in tourism associated with shale drilling using statistical analysis. The findings will be applied to baseline tourism data for Garrett County (based on the 2010 study).*
- *As part of the comprehensive study, RESI is conducting an analysis of property values with respect to changes in proximity of shale gas operations. The Hedonic Analysis will take into consideration the presence of existing vertical natural gas wells, whether the property relies on ground water or public water, and proximity to potential well locations. RESI is using data on existing well locations, data from past permit applications for Marcellus wells (since withdrawn), lease information, and geographic analysis to determine the net change in property values under the scenarios.*
- *RESI conducted an in-person and online survey to evaluate the non-market impact of potential Marcellus shale natural gas exploration and production. The survey was intended to elicit values for environmental protection from residents and non-residents in Allegany and Garrett Counties. Responses will form one set of inputs into the economic model. Questions covered usage of environmental amenities, place of residence, a hypothetical drilling scenario, and demographics. Responses to a question on willingness to pay for environmental protection against potential damages from drilling will also be used to develop an input to help determine the total economic impact of drilling, should it occur.*

6. What future scenarios for Marcellus Shale drilling are being evaluated?
There are three scenarios, intended to simulate a future with no drilling, drilling at a moderate pace, and drilling aggressively. The analysis will project 20 years, beginning in 2017. Details of the scenarios are available at on MDE's Marcellus Shale Economic Study website, but the two drilling scenarios are meant to mimic a boom and bust cycle, where all the wells are drilled in the first 10 years. Under the moderate pace scenario, 25% of the estimated volume of gas in the Maryland portion of the Marcellus shale will be extracted by the wells drilled. Under the aggressive drilling scenario, 75% of that gas will be extracted by the wells drilled. An assumption is made that each well will have a 20-year life.

7. Why model a "no drilling" scenario?
First, it is possible that drilling will not proceed in Maryland. The no-drilling scenario reflects the lower-bound, or current drilling climate, and allows for a baseline of activity with which to compare the 25 and 75 percent scenarios.

8. Why not model a scenario that 100% of the gas is extracted?
A scenario where 100 percent of reserves are extracted is unrealistic for a variety of reasons. First, some owners of mineral rights will not lease their gas rights, so that 100% will not be available. Second, it may not be possible to access all the gas because some areas may be unreachable even by horizontal drilling because of their specific characteristics or because of setbacks from populated areas and sensitive natural resources. Third, it is likely that Maryland, like other shale states, will have "sweet spots" and areas of low yield. It may not be economical to tap the gas in areas of relatively low yield, unless the price of gas rises dramatically.

9. Why not model a midpoint of 50% production?
RESI did not add intermediate scenarios because they would not provide significant information – they would only reflect marginal differences.

10. What assumptions are made about the future price of natural gas?
The United States Energy Information Administration (EIA) reviews historical information and trends in gas pricing, and projects the price of natural gas in the future. The Annual Energy Outlook for 2013 *(AEO2013) predicts prices out to 2040. EIA establishes a "reference case" projection which it describes as "a business-as-usual trend estimate, given known technology and technological and demographic trends." AEO2013, page ii. Any of numerous variables could cause the reference case estimates to be high or low; for example, whether economic activity is strong or weak, whether the prices for oil and coal rise or fall, and whether a carbon tax is imposed. Selecting different assumptions would introduce a bias into RESI's analysis. RESI is therefore using the reference case projections.*

11. Does the study account for the fact that production will not be consistent across all years, and wells can have high yield or low yield even within a fairly small geographic area?

It is true that different wells will have different estimated ultimate recovery (EUR) as well as different rates of decline. By using average numbers and a "typical" curve, RESI will account for the variation as well as if it arbitrarily assigned values to the individual wells.

12. An economic study was done in 2012; why is this study necessary?
Sage Policy Group, Inc. produced The Potential Economic & Fiscal Impacts of Natural Gas Production in Western Maryland *for the Maryland Petroleum Council in March 2012. There are many similarities between that study and the RESI study, but they use different methodologies and scenarios. Perhaps most importantly, the Sage study* ***did not*** *assess the potential negative impact of drilling on the existing economy of western Maryland. Instead, it relied principally on a single study that found that estimated that the environmental impacts from a typical Marcellus Shale well caused $14,000 in economic damages, and noted that the ratio of economic benefit to environmental damage associated with a typical Marcellus Shale well would be about 286 to 1. It did not evaluate the effect on property values or the market for second homes, which is especially important in Garrett County around Deep Creek Lake.*

A comparison of the two studies shows:

Aspect of Economic Study	**Sage**	**RESI**
Total amount of gas that could be produced from the Marcellus shale in Maryland (billion cubic feet)	Low Case: 387.8 Mid-Case: 710.1 High Case: 1299.7	703.16
Number of wells	Low Case: 199 Mid-Case: 365 High Case: 667	25% Scenario: 150 wells 75% Scenario: 450 wells
Year first well drilled	2015	2017
When wells will be drilled	All drilled in the first 11 years	All drilled in the first 10 years
Well comes online	One year after it is drilled	In the year it is drilled
Well production complete after	20 years	20 years
Study period	30 years	20 years
Price of natural gas	U.S. Energy Information Administration Annual Energy Outlook 2011 - Low shale recovery (higher prices) - Reference case - High shale recovery (low prices)	U.S. Energy Information Administration Annual Energy Outlook 2013 - Reference case