IMPACT ANALYSIS OF THE MARCELLUS SHALE SAFE DRILLING INITIATIVE

DARAIUS IRANI, PHD, EXECUTIVE DIRECTOR

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Regional Economic Studies Institute

TOWSON UNIVERSITY

GENERAL COMMENTS

1) The report was difficult to follow; it was readable but not written in layman-friendly terms.
   a. The report will be reorganized to help with flow and readability.

GENERAL COMMENTS

2) There are broken links within citations in the report.

a. Permanent links are provided when possible.
b. If a web address changes or is no longer valid after publication of RESI's report, it is beyond RESI's control.
c. Some links are only available through subscription-only sources.

GENERAL COMMENTS

3) Why were certain topics (i.e., public/environmental health, land use, etc.) not discussed in detail in this study?

a. Certain topics are covered in greater depth in other Maryland-specific studies currently being conducted by other organizations.
b. Other topics are not included in the original scope of work and are therefore not included in RESI's report.
c. In some cases, the report discussed topics in brief if relevant to the major topics for RESI's study.

ASSUMPTIONS AND INPUTS

1) Describe the validity of the REMI PI+ model.
   a. REMI PI+ is one of three industry standard accepted models, and the only one capable of handling forecasted impacts while simultaneously adjusting for price and wage changes over time.

ASSUMPTIONS AND INPUTS

2) How was property value decline incorporated into RESI's analysis?
   a. RESI used half-, one-, and two-mile radii between a property and a well location to determine a percent change in value at each distance.
   b. All else equal, the net change in property values within half- and one-mile radii of a well was an 8 to 9 percent decline. Wells beyond a mile exhibited no loss.

ASSUMPTIONS AND INPUTS

3) How did RESI check the accuracy of employment estimates for the natural gas industry in Maryland?
   a. REMI PI+ employment is from BLS Quarterly Census on Employment and Wages (QCEW).
   b. RESI cross-referenced REMI PI+ employment estimates with
      i. Census County Business Patterns,
      ii. Maryland DBED list of major employers in Garrett County, and
      iii. Personal communication with local employer in the industry.

ASSUMPTIONS AND INPUTS

4) Where are the inputs for the economic impact analysis?
   a. The inputs are available in their respective sections in the report.
   b. RESI will include a table containing all inputs in the revised report.

ECONOMIC AND FISCAL IMPACTS

1) What percentage of jobs and royalty payments will remain within the county?
   a. Continual changes and differences of the overall industry's and individual firms' methods of hiring make determining assumptions on potential leakage unfeasible.
   b. RESI did not break out assumptions regarding royalty payments to full-time residents vs. second-home owners.

ECONOMIC AND FISCAL IMPACTS

2) How does the RESI report differ from the SAGE Policy Group Report?
   a. The major difference between the two studies is that RESI considers both the supply side and the demand side of drilling policy.

TOURISM

1) Why is the tourism section reliant on anecdotal evidence, stakeholder interviews, and limited survey responses? Are data available?
   a. Data at the granular level necessary to determine impacts on Western Maryland's tourism sector were not readily available.
   b. The survey was intended specifically for the contingent valuation analysis.
   c. Stakeholder concerns guided RESI's focus on tourism impacts. These concerns were researched in existing literature and in data where available.

TOURISM

2) Why were national data used for comparison of wages in the natural gas vs. tourism industries?
   a. At the state or county levels, employment totals were not large enough to disclose based on U.S. Census Bureau standards.

TOURISM

2) Garrett County's tourism industry survived through the recession. Are the same factors that contributed to tourism's survival then going to help in the presence of drilling activity?
   a. As part of the reorganization of the report, RESI will clarify any findings regarding this question.

HOUSING

1) What areas and types of housing were included? what inputs were used?
   a. American Community Survey 2012 3-year countywide estimates excluding vacation and seasonal housing and group living quarters
   b. Projections based on REMI PI+ output for 2017 to 2026, total population from REMI PI+ was adjusted to represent ***housed*** population
   c. Permit data provided by both counties were used to determine more accurate estimate of total housing units of each county by 2017, then analyzed as a fixed housing stock for ten years

HOUSING

Figure 18: Housing Analysis for Garrett County

Category	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Baseline (No Drilling)										
Available housing	**402**	**394**	**384**	**324**	**310**	**295**	**277**	**260**	**198**	**178**
Owned or for sale	*(107)*	*(110)*	*(114)*	*(138)*	*(144)*	*(150)*	*(157)*	*(164)*	*(189)*	*(197)*
Rented or for rent	*509*	*504*	*498*	*462*	*454*	*445*	*434*	*424*	*387*	*375*
Unavailable housing	**1,348**	**1,338**	**1,326**	**1,257**	**1,241**	**1,223**	**1,203**	**1,183**	**1,111**	**1,089**
Total Surplus (Shortage)	**1,750**	**1,732**	**1,710**	**1,581**	**1,551**	**1,517**	**1,480**	**1,442**	**1,309**	**1,268**
Scenario 1 (25%)										
Available housing	**391**	**369**	**345**	**270**	**243**	**218**	**191**	**166**	**94**	**81**
Owned or for sale	*(111)*	*(120)*	*(130)*	*(160)*	*(171)*	*(181)*	*(192)*	*(202)*	*(231)*	*(236)*
Rented or for rent	*502*	*489*	*475*	*430*	*414*	*399*	*383*	*368*	*325*	*317*
Unavailable housing	**1,333**	**1,309**	**1,281**	**1,195**	**1,165**	**1,135**	**1,105**	**1,075**	**993**	**977**
Total Surplus (Shortage)	**1,724**	**1,678**	**1,625**	**1,465**	**1,408**	**1,353**	**1,296**	**1,241**	**1,087**	**1,058**
Scenario 2 (75%)										
Available housing	**387**	**357**	**325**	**243**	**208**	**176**	**147**	**119**	**45**	**23**
Owned or for sale	*(113)*	*(125)*	*(138)*	*(171)*	*(185)*	*(198)*	*(210)*	*(221)*	*(251)*	*(260)*
Rented or for rent	*500*	*482*	*463*	*414*	*393*	*374*	*357*	*340*	*296*	*283*
Unavailable housing	**1,329**	**1,295**	**1,258**	**1,163**	**1,123**	**1,087**	**1,053**	**1,022**	**937**	**910**
Total Surplus (Shortage)	**1,716**	**1,651**	**1,582**	**1,405**	**1,331**	**1,264**	**1,200**	**1,141**	**982**	**933**

HOUSING

Figure 18: Housing Analysis for Garrett County (revised to exclude DCL)

Category	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Baseline (No Drilling)										
Available housing	**(272)**	**(280)**	**(289)**	**(348)**	**(361)**	**(377)**	**(393)**	**(411)**	**(471)**	**(489)**
Owned or for sale	*(227)*	*(232)*	*(239)*	*(276)*	*(285)*	*(295)*	*(305)*	*(316)*	*(355)*	*(367)*
Rented or for rent	*(44)*	*(47)*	*(51)*	*(72)*	*(76)*	*(82)*	*(88)*	*(94)*	*(116)*	*(122)*
Unavailable housing	**624**	**604**	**580**	**435**	**401**	**364**	**322**	**279**	**130**	**84**
Total Surplus (Shortage)	**353**	**324**	**290**	**88**	**40**	**(13)**	**(71)**	**(131)**	**(340)**	**(405)**
Scenario 1 (25%)										
Available housing	**(283)**	**(304)**	**(328)**	**(400)**	**(426)**	**(451)**	**(476)**	**(501)**	**(571)**	**(584)**
Owned or for sale	*(235)*	*(248)*	*(263)*	*(310)*	*(326)*	*(342)*	*(359)*	*(375)*	*(419)*	*(428)*
Rented or for rent	*(49)*	*(56)*	*(65)*	*(90)*	*(100)*	*(109)*	*(118)*	*(127)*	*(151)*	*(156)*
Unavailable housing	**773**	**706**	**630**	**395**	**313**	**232**	**151**	**70**	**(154)**	**(197)**
Total Surplus (Shortage)	**311**	**240**	**157**	**(96)**	**(184)**	**(272)**	**(360)**	**(447)**	**(689)**	**(735)**
Scenario 2 (75%)										
Available housing	**(287)**	**(316)**	**(347)**	**(427)**	**(461)**	**(491)**	**(520)**	**(546)**	**(618)**	**(641)**
Owned or for sale	*(237)*	*(256)*	*(276)*	*(327)*	*(349)*	*(368)*	*(387)*	*(404)*	*(450)*	*(464)*
Rented or for rent	*(50)*	*(60)*	*(71)*	*(100)*	*(112)*	*(123)*	*(133)*	*(143)*	*(168)*	*(176)*
Unavailable housing	**761**	**667**	**567**	**309**	**202**	**103**	**11**	**(75)**	**(307)**	**(379)**
Total Surplus (Shortage)	**299**	**197**	**89**	**(189)**	**(305)**	**(412)**	**(511)**	**(604)**	**(854)**	**(932)**

HOUSING

Housing Analysis—Summary of Revision

Scenario	County	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Baseline (0%)	Allegany County	2,655	2,536	2,398	1,765	1,572	1,355	1,118	873	371	110
	Garrett County	1,750	1,732	1,710	1,581	1,551	1,517	1,480	1,442	1,309	1,268
	Garrett County w/o DCL	353	324	290	88	40	(13)	(71)	(131)	(340)	(405)
Scenario 2 (25%)	Allegany County	2,592	2,475	2,277	1,648	1,398	1,189	959	724	231	(20)
	Garrett County	1,724	1,678	1,625	1,465	1,408	1,353	1,296	1,241	1,087	1,058
	Garrett County w/o DCL	311	240	157	(96)	(184)	(272)	(360)	(447)	(689)	(735)
Scenario 3 (75%)	Allegany County	2,590	2,407	2,208	1,515	1,270	1,008	729	446	(34)	(268)
	Garrett County	1,716	1,651	1,582	1,405	1,331	1,264	1,200	1,141	982	933
	Garrett County w/o DCL	299	197	89	(189)	(305)	(412)	(511)	(604)	(854)	(932)

HOUSING

2) What research was done to determine how many of these units are fit to live in?
   a. Data with this detail are not readily available. RESI relied on Census definitions of housing types.

HOUSING

3) What mention is there on workers preferences for housing vs. locals' willingness to sell/rent to shale workers?
   a. RESI cited other studies describing preferences to sell/rent to shale workers vs. permanent residents.
   b. Worker preferences for temporary vs. permanent housing depend on the share of local vs. transient workers.

HOUSING

4) What findings are there regarding potential blight from housing impacts in Western Maryland?
   a. RESI's report included qualitative findings regarding precautions to avoid long-term blight.

TRUCKING

1) The data for the analysis appear to underestimate/overestimate the potential trucking trips on Western Maryland. How were these data calculated?
    a. Data in the trucking section of the report were calculated using
        a. RESI's well build out scenarios and
        b. NY Department of Environmental Conservation's data on truck trips needed for well development.

TRUCKING

2) Why did RESI not cover the additional incurred costs associated with the increased road traffic within its report?
   a. A separate study on transportation issues/costs will be conducted. Therefore, costs are not calculated in RESI's report.

QUESTIONS & COMMENTS