ECONOMIC AND FISCAL IMPACT ANALYSIS OF MARYLAND’S GGRA PLAN

DR. DARAIUS IRANI, CHIEF ECONOMIST

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Regional Economic Studies Institute

TOWSON UNIVERSITY
AGENDA

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  • Daraius Irani, Ph.D.—Chief Economist, Regional Economic Studies Institute
  • Susan Steward, M.S.—Senior Economist, Regional Economic Studies Institute
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  • Input variables and data
  • Output results example
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• Q & A
INTRODUCTIONS

Daraius Irani, Ph.D.
• Chief Economist, Regional Economic Studies Institute (RESI) of Towson University
  • Lead methodologist for several regional forecasts and analyses
  • Email: dirani@towson.edu

Susan Steward, M.S.
• Senior Economist, Regional Economic Studies Institute (RESI) of Towson University
  • Lead in design and technical econometric methods for regional forecasts and analyses
  • Email: ssteward@towson.edu
WHAT IS RESI?

Regional Economic Studies Institute

- Formed in 1989 at University of Baltimore
- Moved to Towson University in 1996
- Established as the research and consulting arm of Towson University, providing unbiased results to decision makers
- Self-funded through its contracts
- Provides high-level analysis expertise to the private, public, and nonprofit sectors
- Expertise includes the following:
  - Forecasting,
  - Economic and fiscal impact analyses,
  - Business process consulting, and
  - Technical writing.
GREENHOUSE GAS REDUCTION ACT ECONOMIC AND FISCAL IMPACT ANALYSIS
Since 2011 RESI has worked with MDE to develop the economic and fiscal impact analysis of the GGRA on Maryland’s economy.

The report in 2011 used the IMPLAN model to assess the potential economic and fiscal impacts associated with the GGRA.

- The IMPLAN model is a static input/output model used to determine jobs, output, and wages associated with a shock in the economy.
- RESI at the time had the job of estimate the economic impact of both investment and operation of close to 75 programs (some with five or more subprograms).
- The report in 2011 estimate a per $1 million investment for potential impacts, but suggested agency involvement would yield better investment analysis results.
- The 2012 analysis sought to work with state agencies responsible for the implementation of policies directly in determining investment costs.
METHODOLOGY

• RESI introduced two phases within the analysis to identify two periods.
  • **Investment Phase**
    • Under the investment phase, RESI looked at costs associated with implementing programs and analyzed the economic and fiscal impacts.
    • These costs may include administration fees, planning and architecture, right-of-way purchases, and purchasing of materials such as infrastructure improvements.
  • **Operation Phase**
    • The operation phase analyzed the economic and fiscal impacts associated with the program’s full implementation.
    • This phase may include costs as well as benefits. Costs may include any maintenance costs for new infrastructure, costs incurred by companies from programs, or administrative fees.
    • The operation phase captured many of the benefits associated with programs such as reduced energy demand, reduced spending on gasoline, and increased spending on local goods and services.
In the 2012 analysis, RESI changed the methodology to be more dynamic with the introduction of the REMI PI+ tool.

- REMI PI+ is one of three main input/output modeling tools recognized by federal, state, and local governing bodies for economic impact analysis work.
- REMI PI+ is a dynamic modeling tool, meaning what happens in one year then affects the proceeding years.
- The model uses historical data back to 1990 to create a baseline forecast.
- Unlike the IMPLAN model, REMI PI+ accounts for price changes, wage changes, and a constrained labor supply.
- The 2012 analysis produced operation results similar to those from the 2011 report.
The current economic impact analysis for 2015 uses the REMI PI+ model.
- All state agencies provided feedback on the GGRA programs to RESI.
- RESI used this information to base assumptions or projected costs associated with each program for the REMI PI+ model.
- Categories that RESI used within the REMI PI+ model were based on several factors within each program, including agency guidance, program description, and relevant research.
- The economic impact analysis for the current GGRA plan includes status quo and enhanced scenarios for each of the 65 GGRA policies where enhancements were noted.
- Under the 2015 analysis, RESI created and ran more than 130 scenarios within REMI PI+ to establish the potential economic and fiscal impacts for Maryland.
To determine the set of inputs for both investment and operation phases, RESI worked closely with several agencies.

- Energy programs had the most interwoven subprograms.
  - For example, RGGI funds go into the Strategic Energy Investment Fund (SEIF) and this is divided into several programs managed by MEA.
  - Several of these programs under SEIF are included within subprograms of GGRA programs such as EMPOWER.

- To avoid double counting spending and to account for transfer of funds, RESI spent considerable time and care to mitigate potential for double counting of costs and impacts.

- The RGGI, EMPOWER, and RPS programs became one of the first sets of spider charts RESI estimated for the GGRA to mitigate potentials for double counting of costs.
Other programs were more direct on spending and future economic impacts (for example, transportation programs).

- Transportation programs had the most defined series of inputs.
  - For example, programs were defined within phases such as planning, right-of-way, and construction.
  - Funding sources were defined to assess state and federal funds being used to meet program objectives.
- Transportation data allowed RESI to create a series of impacts from each phase of a program’s implementation.
METHODOLOGY

• Operation phase impacts were based on several key factors, such as the following:
  • The utilities companies’ revenue losses from the lower energy demand;
  • Reduction of consumer spending on transportation fuels and the reallocation from gas savings; and
  • Public transportation costs included parking, pass price, and the estimated number of individuals participating in the new transit lines.
METHODOLOGY

• Operation and investment phases could be dependent.
  • In the case of some programs, operation phase impacts usually generated the investment funds for other programs to offset private costs.
  • RESI looked at the costs of funds in this case to those participating in those programs in operation, and the investment costs consisted of maintenance and supervision of the program.
  • This occurred in programs such as Nutrient Trading Markets and RGGI.
• Overall, RESI found the analysis associated with the GGRA program was more a web of programs working in coordination to achieve reductions rather than siloed programs.
METHODOLOGY

EmPOWER Residential Investment

EmPOWER Utilities Operation

EmPOWER Business Investment

EmPOWER Appliances Investment
The chart seen on the last slide was a smaller version of some of the inter-program interaction RESI determined during design of methodology.

The previous slide is a series of subprograms under EmPOWER.

Although subprogram interaction occurred, the majority of interaction occurred at the program level.

The analysis concluded with a series of outputs over the lifespan of the GGRA (2010–2020).

In some cases, RESI acknowledges that the full benefits may be realized after 2020 (for example, in energy programs).
GGRA IMPACT ON MANUFACTURING IN MARYLAND ECONOMIC AND FISCAL IMPACT ANALYSIS
METHODOLOGY

• Under the current GGRA plan, the guidelines require a Manufacturing economic and fiscal impact analysis to be completed by 2015.

• The analysis focused on the manufacturing sector impacts from the GGRA status-quo analysis.

• RESI reached out to local manufacturers within Maryland to conduct case studies on the current GGRA impacts on their businesses.
METHODOLOGY

Case Studies
Representatives of both RESI and MDE visited the case study participants to witness the impacts from GGRA.

- Redland Brick—Winter 2013/2014
- GM Baltimore Operations—Fall 2015

Case study participants explained implementations they made to comply (if needed) with GHG reductions.

In other cases, RESI found the plants had some form of renewable resource strategy in place for years without GGRA intervention.

The results showed no discernable impacts on the manufacturing sector as a result of GGRA programs.
## Preliminary Findings

### Greenhouse Gas Reduction Act Economic and Fiscal Impact Analysis

<table>
<thead>
<tr>
<th>Impact</th>
<th>Status Quo</th>
<th>Enhanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobs by 2020</td>
<td>25,082</td>
<td>28,352</td>
</tr>
<tr>
<td>Total Wages 2010–2020</td>
<td>$12,445,870,690</td>
<td>$14,642,110,152</td>
</tr>
<tr>
<td>Total Output 2010–2020</td>
<td>$25,088,389,451</td>
<td>$30,841,551,967</td>
</tr>
<tr>
<td>Total Costs 2010–2020</td>
<td>$22,468,578,057</td>
<td>$26,586,568,751</td>
</tr>
<tr>
<td>Net Benefit from 2010–2020</td>
<td>$2,619,811,388</td>
<td>$4,254,983,216</td>
</tr>
</tbody>
</table>
Greenhouse Gas Reduction Act—Manufacturing Economic Impact Analysis

<table>
<thead>
<tr>
<th>Impact</th>
<th>Status Quo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobs by 2020</td>
<td>113.1</td>
</tr>
<tr>
<td>Wages by 2020</td>
<td>$10,607,973</td>
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<tr>
<td>Output by 2020</td>
<td>$26,467,801</td>
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<tr>
<td>Average Annual Wage</td>
<td>$93,793</td>
</tr>
<tr>
<td>Output per Worker Value</td>
<td>$234,021</td>
</tr>
</tbody>
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