

ECONOMIC AND FISCAL IMPACT ANALYSIS OF MARYLAND'S GGRA PLAN

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Regional Economic
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AGENDA

- Introductions
 - Daraius Irani, Ph.D.—Chief Economist, Regional Economic Studies Institute
 - Susan Steward, M.S.—Senior Economist, Regional Economic Studies Institute
- What is RESI?
- GGRA
 - Input variables and data
 - Output results example
- Manufacturing
 - Inputs variables from GGRA
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INTRODUCTIONS

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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**

METHODOLOGY

- 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.

METHODOLOGY

- 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.

METHODOLOGY

- 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.

METHODOLOGY

- 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.

METHODOLOGY

- 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.

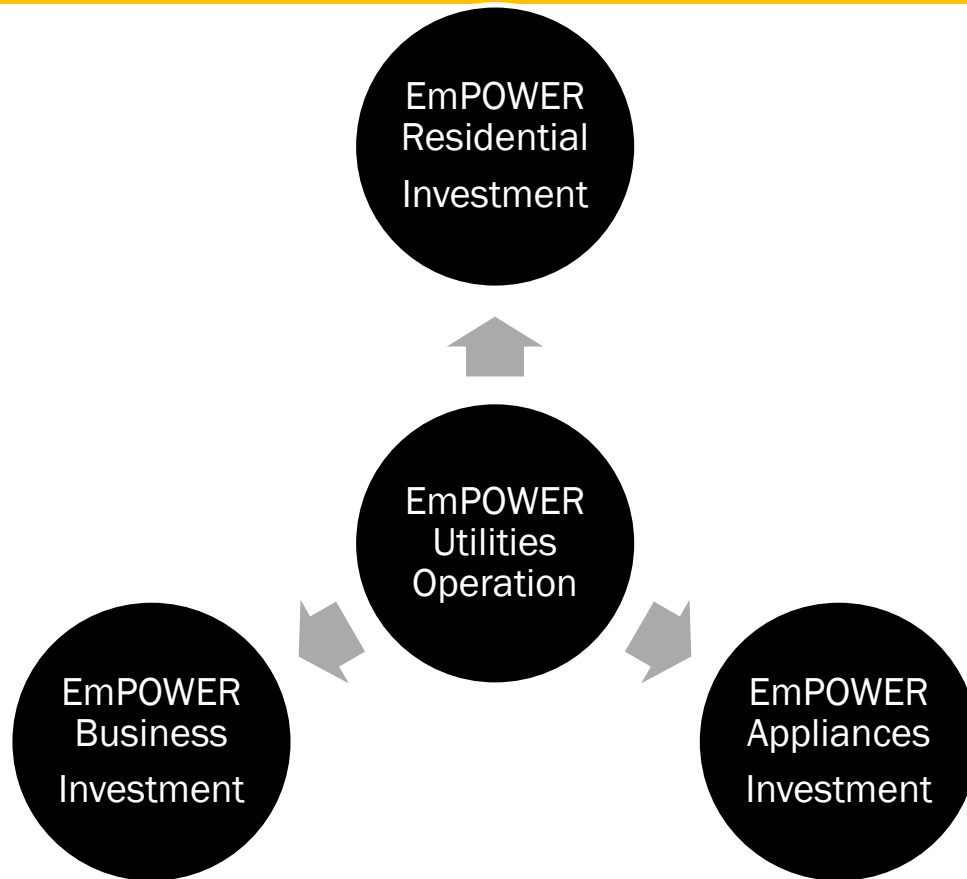
METHODOLOGY

- 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



METHODOLOGY

- 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



METHODOLOGY

- 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

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Greenhouse Gas Reduction Act Economic and Fiscal Impact Analysis

Impact	Status Quo	Enhanced
Jobs by 2020	25,082	28,352
Total Wages 2010–2020	\$12,445,870,690	\$14,642,110,152
Total Output 2010–2020	\$25,088,389,451	\$30,841,551,967
Total Costs 2010–2020	\$22,468,578,057	\$26,586,568,751
Net Benefit from 2010–2020	\$2,619,811,388	\$4,254,983,216

PRELIMINARY FINDINGS

Greenhouse Gas Reduction Act—Manufacturing Economic Impact Analysis

Impact	Status Quo
Jobs by 2020	113.1
Wages by 2020	\$10,607,973
Output by 2020	\$26,467,801
Average Annual Wage	\$93,793
Output per Worker Value	\$234,021

Q & A