MARYLAND
CLEAN ENERGY CENTER

Economic Impact of the Maryland Clean Energy Center

November 2025

Prepared by:

BEACON
Business Economic and Community Outreach Network
At Salisbury University

Report Contents

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Statewide Output
$621 MILLION

Jobs Supported
3,000
average 176 per year

Labor Income
$236 MILLION

Tax Revenue
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Returns

$21.68 in output for every public dollar

$2.87 in tax revenue for every public dollar

105 jobs per $1 million in public investment

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Executive Summary

The Business and Community Outreach Network at Salisbury University (BEACON) worked with the Maryland Clean Energy Center (MCEC) to collect, analyze and calculate the economic impact that MCEC, through its initiatives, has had on the economy of the state of Maryland during its seventeen years of operations, from 2009 to 2025. The project was launched on August 11, 2025, with a virtual meeting between the BEACON and MCEC staff.

BEACON has estimated that the overall impact from MCEC's initiatives from 2009 through 2025, the results are listed below, showing the robust impact that it has had on the economy of Maryland over its seventeen years of operation.

MCEC Impacts in Maryland over past 17 years (2009 – 2025)

- Statewide Output - **$621 million**
- Jobs supported - **3,000**, average **176** per year
- Labor Income - **$236 million**
- Tax Revenue - **$82 million**

Returns

- **$21.68** in output for every public dollar
- **$2.87** in tax revenue for every public dollar
- **105** jobs per **$1 million** in public investment

BEACON has estimated that the overall impact from MCEC's activities between 2009 and 2025 contributed over **$621 million** in total statewide economic output, supported **3,000 jobs, an average of 176 per year for its seventeen years**, and generated an estimated **$236 million** in labor income. MCEC, through its initiatives, contributed over **$82 million** in combined local, state, and federal tax revenue. The impacts of many of the initiatives continue to yield returns for the residents and firms that have ongoing energy costs savings from the programs they participated in.

MCEC provided a solid return on investment from local, state, and federal funding throughout the period. The Center produced **$21.68** in output for every public dollar received. There was an estimated **$2.87** in total tax revenue for every dollar in public support, with **$1.77** in state and local taxes for every state and local dollar and **$4.54** in federal taxes for every federal dollar. The programs supported one job for every **$9,557** in public funding. The jobs results show over **105 jobs per $1 million** in public investment. These ROI metrics show that MCEC has effectively deployed its funding to deliver strong financial impacts to the state and its residents over the past seventeen years.

The project required the collection, interpretation, refinement, verification and IMPLAN modeling of the MCEC initiatives. BEACON reviewed data supplied by MCEC and reviewed annual reports and other documents to understand the scope, focus, and potential impacts of

each program. With this better understanding, the BEACON team discussed the initiatives with MCEC staff to gain clarity on how the programs operated and to collect the necessary information to fully model how the program impacted the state's economy. Where necessary, BEACON supplemented the provided data with relevant industry information to ensure a comprehensive and accurate representation of each initiative's economic impacts. Once a portion of the data was modeled and a portion of the impact was calculated, BEACON met with the Board to understand any specific concerns or needs.

Our reporting shows the overall impact of MCEC, as well as the impacts from each initiative. The calculations are representative of the impacts of MCEC and its initiatives. We utilized IMPLAN, a widely accepted economic modeling platform, to calculate the direct, indirect and induced impacts. These impacts are a representation of how MCEC has impacted the state through its clean energy programs; however, other industry groups in this sector may have overlapping impacts and the totals should not be used additively.

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Introduction

The Maryland Clean Energy Center (MCEC) was established by the Maryland General Assembly in 2008 as an instrumentality of the state, tasked with advancing clean energy and energy efficiency initiatives to drive economic development, create jobs, and improve the environment. Operating as a statewide green bank, MCEC develops and supports programs that expand access to capital, reduce energy costs for consumers, and accelerate the adoption of innovative clean energy technologies. Through partnerships with public, private, and nonprofit organizations, MCEC has become a catalyst for investment in Maryland's energy economy, leveraging resources to support clean energy businesses, contractors, and local governments while improving energy resilience for residents and communities. According to the U.S. Environmental Protection Agency, Maryland achieved the nation's largest reduction in greenhouse gas emissions between 2005 and 2022, cutting overall emissions by 36% and per capita emissions by 42% (U.S. EPA, 2024).[1] While this achievement cannot be attributed solely to MCEC, the organization's programs and investments have played an important supporting role in advancing the state's clean energy goals and contributing to Maryland's overall progress in reducing emissions.

Over the years, MCEC has launched and administered a variety of financing programs, including loan loss reserve initiatives, clean energy loan programs, tax-exempt bond issuances, and property-assessed clean energy (PACE) financing. These efforts have provided critical support for businesses and consumers by lowering borrowing costs, encouraging renewable energy deployment, and fostering sustainable economic growth. In addition, MCEC's technical assistance, outreach, and policy support have made it an essential partner in advancing Maryland's clean energy goals.

In support of these efforts, the Business, Economic, and Community Outreach Network (BEACON) of the Perdue School of Business at Salisbury University partnered with MCEC to conduct a comprehensive analysis of the Center's economic impact. This study, covering activities from 2009 through 2025, evaluates the direct, indirect, and induced effects of MCEC's programs on Maryland's economy. Specifically, the analysis examines the impacts of MCEC's initiatives, the energy cost savings, and the net tax impacts generated through MCEC's work.

By quantifying these impacts, this report highlights MCEC's vital role in strengthening Maryland's clean energy ecosystem, supporting workforce development, and enhancing long-term energy affordability and sustainability. The findings presented herein not only document the Center's contributions over the past seventeen years but also provide valuable insights to guide future policy and investment decisions in Maryland's clean energy sector, as well as guidance on the data that should be collected to show the entire range of impacts.

[1] U.S. Environmental Protection Agency. State GHG Emissions and Removals. As cited in Environment America (2024). "Maryland Leads Nation in Reducing Greenhouse Gas Emissions."

Programs Evaluated

This analysis draws on program and operational data provided by the Maryland Clean Energy Center (MCEC) spanning 2009–2025. BEACON's approach was designed to measure both the direct impact of MCEC's operations and the broader economic effects generated by its initiatives. Our findings include the overall economic output, job impacts, and tax revenue of MCEC in the state of Maryland. These include the direct, indirect, and induced impacts. Specifically, we reviewed and evaluated the Maryland Home Energy Loan Program (MDHELP), Clean Energy Advantage Loan Program (CEA), Pre-Development Technical Assistance Services (PTAS), Maryland Property Assessed Clean Energy Program (MDPACE), Maryland Clean Energy Capital Program (MCAP), and Maryland Energy Innovation Accelerator (MEIA). For each of these initiatives, we determined the impacts by assessing program expenditures and related economic activities to calculate the total economic impact of each program, along with the related tax revenue and job impacts.

We reviewed the combined impacts where MCEC's MEIA program partnered with the Maryland Energy Innovation Institute (MEI^2). These results may be evaluated in the future as separate calculation. The MEIA results included in the overall MCEC impacts are only the results from MEIA.

Data Collection

All data for the project and analysis were provided by MCEC. BEACON reviewed MCEC annual reports, internal tracking documents, and initiative-specific data. Where necessary, BEACON completed additional calculations using publicly available data to calculate impacts. This included industry savings averages and project spending averages to better break down the available data from MCEC.

BEACON reviewed MCEC annual reports and summary charts, along with summary documents provided by MCEC staff. After initial data review and meetings with MCEC, BEACON began an independent analysis of each project. This included conversations with staff assigned to the specific projects, along with more general accounting and financial data specialists. BEACON worked with MCEC staff to understand how each initiative operated, the type of clients they assisted, what the project scopes and timelines were, and any known impacts. This data collection was often iterative, requiring several exchanges and clarification steps. Through this review, the data used in modeling the initiatives should include the full scope of the programs and their impacts. The programs followed three focus areas: residential, commercial, and technology commercialization and deployment (entrepreneurial).

Methodology & Timeline

The analysis utilized the IMPLAN input-output modeling software, analyzed with Maryland-specific datasets to ensure accuracy and relevance. Through IMPLAN, we measured the direct, indirect, and induced economic effects of each program, capturing how MCEC-supported activities flow through and strengthen the state's economy. Key inputs relevant to each initiative - including project budgets and scope, lending activity, operating expenditures, job and investment totals - were modeled to show the quantifiable outputs such as job creation, labor income, business activity, and tax revenues. Our study developed a consistent framework showing the economic activity in Maryland that each initiative produces, including jobs and labor income impacts as well as tax revenue impacts. We were able to use the overall impact of MCEC's operations to calculate a Return On Investment (ROI) on the public funding received. All results were calculated in the year of impact and standardized to 2025-dollar values. Total results are for the entire period, and should be divided by the years the initiatives are active to reflect an average annual employment. One note: the industry models within IMPLAN are only through 2023, so the 2024 and 2025 data were analyzed using the 2023 industry datasets. By applying this program-level approach, we were able to evaluate the contribution of each initiative individually while also presenting a comprehensive view of MCEC's overall impact on Maryland's economy.

The estimations produced are for MCEC, but they do not imply that the impacts are limited to just MCEC. The impacts of firms that are funded through spending are included in the overall impact of MCEC. If those firms were members of an industry group that studied its impact, some portion of the results included in this report would be reflected in that industry report. This note is included because the impacts from MCEC and the impacts of other entities in the clean energy economy are not additive. They reflect the related impacts of their efforts. The scope of this report was also limited to the impacts in Maryland of MCEC's activities and does not reflect the leakages that occur when the activities produce impact outside of Maryland. Our calculations show an estimated $107.9 million direct leakages. The study also did not calculate the impacts on the electric generation and distribution industry.

The project followed a structured timeline designed to ensure comprehensive review and analysis of MCEC's programs. We began with project initiation and data collection, followed by the compilation and verification of program-level information. Once the data was secured, BEACON conducted preliminary analyses to establish baseline indicators and refine the scope of the study. A mid-project progress review was then completed, which allowed for feedback, clarification of data gaps, and alignment on next steps. Building on this foundation, we performed detailed program-level analyses, applying IMPLAN modeling to measure the direct, indirect, and induced impacts of each initiative. ROI calculations were subsequently developed and standardized to 2025-dollar figures. The final stages included synthesis of results, drafting

of the comprehensive report, and preparation of findings for presentation to MCEC and stakeholders.

IMPLAN is the leading provider of economic impact data and analytical applications. IMPLAN serves the economic data needs of researchers, policy makers, decision makers, advocates, business leaders, governments, and more. IMPLAN was created by academics to serve the needs of the United States Forest Service in the 1970s. It has been transformed today to serve as a solution provider for anyone interested in better understanding their economy. IMPLAN is a regional economic analysis software and data application that is designed to estimate the impact or ripple effect of a given economic activity or the contribution of some existing activity within a specific geographic area. The methodology is based on three types of effects, or "ripples," of economic activity:

- **Direct effects:** The initial economic change caused by an event. For example, the hiring of construction workers for a new project.
- **Indirect effects:** The changes in interindustry transactions as local industries increase their purchases to meet the needs of the directly affected industries. In the construction example, this would include increased sales for the local construction material manufacturers.
- **Induced effects:** The changes in local spending that result from the new household income generated by the direct and indirect effects. For example, construction workers and employees in supporting industries spend their new income on groceries, gas, and other services within the local economy.

IMPLAN utilizes an economic modeling technique called Input-Output Analysis and a Social Accounting Matrix, which is a type of applied economic analysis that tracks the interdependence among various producing and consuming industries of an economy and the spending of households. It measures the relationship between a given set of demands for final goods and services and the inputs required to satisfy those demands. For more information on the IMPLAN modeling process, visit IMPLAN.com.[2]

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[2] Implan Report toolkit – IMPLAN - support. (n.d.-b). https://support.implan.com/hc/en-us/articles/360044985833-IMPLAN-Report-Toolkit

Economic Impacts of MCEC and Its Initiatives

Overall Economic Impact of MCEC Operations and Program Initiatives (2009–2025)

Through its operations and initiatives, MCEC facilitates partnerships, manages financing programs, and supports initiatives that expand access to clean energy technologies for businesses, institutions, local governments, and residents. Core operational activities include program administration, technical assistance, financial management, stakeholder engagement, and policy coordination to strengthen Maryland's clean energy economy and infrastructure.

The impacts of all of the administration and operation of the organization, along with the programmatic initiatives: MDHELP, CEA, MDPACE, PTAS, MCAP and MEIA were modeled together to calculate the overall impact of the program from 2009 through 2025. The impacts of many of the energy savings initiatives are ongoing; the future values are not included in this study.

BEACON has estimated that the overall impact from MCEC's activities between 2009 and 2025 contributed over $621.5 million in total statewide economic output, supported 3,000 jobs, or 176 per year over its 17 years, and generated roughly $236.0 million in labor income. The programs contributed over $82.2 million in combined local, state, and federal tax revenue (see Tables 1 & 2).

Table 1: MCEC Overall Economic Output

Impact	*Employment*	*Labor Income*	*Value Added*	***Total Output***
Direct	1983	$167,859,886	$247,156,896	$412,851,722
Indirect	503	$36,116,574	$60,792,203	$106,976,558
Induced	514	$31,974,251	$66,693,197	$101,709,304
Total	**3000**	**$235,950,711**	**$374,642,296**	**$621,537,584**
Per Year	**176**	**$13,879,454**	**$22,037,782**	**$36,561,034**

Table 2: MCEC Overall Tax Output

Impact	*State, County, and Subcounty*	*Federal*	***Total***
Direct	$16,333,792	$36,023,067	$52,356,859
Indirect	$6,405,005	$8,129,501	$14,534,506
Induced	$7,883,218	$7,448,280	$15,331,498
Total	**$30,622,015**	**$51,600,848**	**$82,222,863**
Per year	**$1,801,295**	**$3,035,344**	**$4,836,639**

Summary of Return on Investment Findings

BEACON reviewed the impacts shown above and calculated how these measured when compared to the investment of local, state and federal funds in MCEC.

During its seventeen years of operations, MCEC has received **$28.7 million** in public funding from local, state and federal sources. Based on this investment, MCEC produced approximately **$21.68** in economic output for every public dollar received and generated an estimated **$2.87** in total tax revenue per public dollar invested. This includes an estimated **$1.77** in state and local tax revenue for every state and local dollar and **$4.54** in federal tax revenue for every federal dollar.

Overall, MCEC's programs supported one job for approximately every **$9,557** in public funding. The jobs results show over **105 jobs per $1 million** in public investment. These ROI metrics show that MCEC has effectively deployed its funding to deliver strong financial impacts to the state and its residents over the past seventeen years.

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Economic Impacts by Initiative:

Maryland Clean Energy Center (MCEC) Program Management

Through its operations, MCEC facilitates partnerships, manages financing programs, and supports initiatives that expand access to clean energy technologies for businesses, institutions, local governments, and residents. Core operational activities include program administration, technical assistance, financial management, stakeholder engagement, and policy coordination to strengthen Maryland's clean energy economy and infrastructure. The overall MCEC program management budget supports all of the initiatives, with the exception of the MEIA program, with the MEIA operating budget included in its results section. MCEC began operations in 2009 and the figures used in this analysis reflect figures from 2009 through 2022.

Data for the MCEC operations budget was obtained from the MCEC and supplemented with information from annual fiscal year reports. The data was reviewed in conjunction with MCEC staff, then analyzed and discussed with MCEC where clarification was needed. Finally, the budgets were modeled to calculate impacts.

MCEC's program management budget from 2009 through 2025 contributed an estimated $35.4 million in total statewide economic output, supported 179 jobs, and generated over $5.1 million in combined local, state, and federal tax revenue (see Tables 3 & 4).

Breaking these impacts down, MCEC's administrative and program management functions generated an estimated $23.1 million in direct economic output through staff salaries, vendor contracts, and professional services essential to program delivery. These expenditures support numerous industries across Maryland, including professional, technical, and financial services that play a critical role in implementing clean energy initiatives.

The indirect impacts of MCEC operations reflect the ripple effects generated through supply chain activities such as consulting, accounting, technology support, and business services procured to sustain daily operations. In 2025, these activities generated an estimated $4.9 million in indirect economic output. Additionally, the income earned by employees and contractors associated with MCEC operations contributes to induced economic effects, as those individuals spend their earnings within their local communities. The induced output estimated to be $7.4 million, representing the household spending stimulated by MCEC-related direct and indirect expenditures.

In total, MCEC operations supported 179 jobs statewide, including 116 direct positions within MCEC and its immediate service providers, 26 indirect positions across the supply chain, and 37 induced jobs generated through household spending.

Table 3: MCEC Program Management Economic Output

Impact	*Employment*	*Labor Income*	*Value Added*	***Total Output***
Direct	116	$12,785,219	$15,613,086	$23,123,226
Indirect	26	$1,909,912	$2,903,659	$4,872,217
Induced	37	$2,293,378	$4,909,030	$7,422,245
Total	**179**	**$16,988,509**	**$23,425,775**	**$35,417,688**

Table 4: MCEC Program Management Tax Impact

Impact	*State, County, and Subcounty*	*Federal*	***Total***
Direct	$641,375	$2,737,722	$3,379,096
Indirect	$216,029	$426,011	$642,040
Induced	$565,419	$538,199	$1,103,617
Total	**$1,422,823**	**$3,701,931**	**$5,124,754**

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Maryland Home Energy Loan Program (MDHELP)

MDHELP was created through a collaboration between the MCEC and the Maryland Energy Administration (MEA) to make residential energy efficiency projects more accessible. The program offered low-interest financing, up to $20,000, to assist homeowners with the initial costs of improving their home's energy performance through measures such as upgraded heating and cooling systems, insulation, and other energy-saving improvements. By pairing with existing rebate initiatives, MDHELP helped reduce financial obstacles for Maryland residents seeking to lower energy use and utility expenses. The program concluded funding improvements on August 1, 2017, but the impacts of the energy savings from the improvements continue through 2025 and on.

Data for MDHELP was obtained from the MCEC and supplemented with information from annual fiscal year reports. The data was reviewed, compiled, and analyzed to capture verified program activity and outcomes, including loan distribution, project participation, and estimated energy savings. Data from a broad sampling of over 900 projects was used to estimate the range of project types including HVAC and insulation/air-sealing.

From inception in 2011, project work through 2017, and ongoing energy savings through 2025, MDHELP generated an estimated $59.5 million in total statewide economic output, supporting 387 jobs and contributing over $8.4 million in combined county, state, and federal tax revenues (see Tables 5 & 6).

Of this total, approximately $43.5 million represented direct economic output associated with residential energy efficiency improvements financed through MDHELP and the ongoing energy savings that homeowners have received. These expenditures include costs for materials, equipment, construction, and contractor labor. For example, when a homeowner uses MDHELP financing to install new insulation, replace outdated HVAC systems, or upgrade to energy-efficient windows, the resulting spending on goods and services contributes directly to Maryland's clean energy economy. These home improvement projects also create additional demand within the state's supply chain through manufacturers producing high-efficiency systems, distributors providing materials, and contractors delivering specialized installation and other services. The improvements resulted in energy savings that the participants were able to use for other purposes.

During the period from inception through 2025, MDHELP-supported activities generated an estimated $8.4 million in indirect economic output through these supplier and service relationships. As employees involved in MDHELP-funded projects earn income, a portion of their wages is spent within their local communities, resulting in further induced economic output estimated at $7.5 million. This represents the broader household spending effects tied to program-related employment.

Beyond economic output, MDHELP financing supported employment across multiple sectors, including construction, retail, energy services, and professional trades. The program's direct impacts accounted for 312 jobs. Additionally, indirect supply chain effects supported 39 jobs, and induced household spending generated an additional 37 positions across various industries such as retail, healthcare, and local services. Collectively, MDHELP-related activity supported 387 jobs statewide.

Table 5: MDHELP Economic Output

Impact	*Employment*	*Labor Income*	*Value Added*	***Total Output***
Direct	312	$15,711,555	$25,442,646	$43,514,308
Indirect	39	$2,819,406	$4,766,200	$8,405,133
Induced	37	$2,242,180	$5,060,540	$7,547,515
Total	**387**	**$20,773,142**	**$35,269,386**	**$59,466,956**

Table 6: MDHELP Tax Impact

Impact	*State, County, and Subcounty*	*Federal*	***Total***
Direct	$2,941,855	$3,161,966	$6,103,821
Indirect	$517,196	$646,699	$1,163,895
Induced	$565,117	$555,013	$1,120,130
Total	**$4,024,168**	**$4,363,678**	**$8,387,846**

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Clean Energy Advantage Loan Program (CEA)

CEA was developed by the Maryland Clean Energy Center (MCEC) in partnership with private lending institutions to expand access to affordable financing for residential clean energy projects. The initiative began in 2022 and has continued through 2025. The program enables Maryland homeowners to invest in energy efficiency improvements by offering low-interest loans through approved local lenders. CEA supports projects such as HVAC upgrades, whole home insulation, and other home performance enhancements that reduce energy consumption and utility costs. By facilitating partnerships between homeowners, contractors, and lenders, the program helps accelerate the adoption of clean energy technologies and supports the state's broader goals for energy efficiency and sustainability.

CEA loan information was provided by the MCEC, including a comprehensive list of loan values issued during the program's lifespan from 2022 through 2025. Additional publicly available data was used to provide insights into the value energy savings. The data was reviewed, compiled, and analyzed to capture verified program activity and outcomes, including loan distribution, project participation, and estimated annual energy savings. Only completed projects were included to ensure the analysis reflects actual impact rather than projected or anticipated results.

From inception through 2025, the CEA program has generated an estimated $6.4 million in total statewide economic output, supporting 36 jobs and contributed just under $1.0 million in combined county, state, and federal tax revenues (see Tables 7 & 8).

Of this total, about $4.0 million represented direct economic output tied to residential clean energy and energy efficiency projects financed through the CEA program. These expenditures included costs for materials, equipment, installation, and contractor labor. For instance, when a homeowner secures a CEA loan to replace a heating and cooling system, the associated spending on goods and services directly supports Maryland's clean energy economy. These projects also stimulate additional demand within the state's supply chain, such as manufacturers producing renewable energy components, distributors supplying materials, and service providers offering installation and maintenance support.

Through 2025, CEA-financed activity produced approximately $1.2 million in indirect economic output through supplier and contractor relationships. As workers involved in these projects earned income, their spending within local communities generated an additional $1.2 million in induced economic output, representing the household spending stimulated by CEA-related direct and indirect expenditures.

Beyond economic output, the CEA program bolstered employment across multiple industries, including construction, energy services, retail, and professional trades. In 2025, direct program activity supported 24 jobs, indirect supply chain impacts created 6 jobs, and induced household spending effects generated another 6 jobs across industries such as retail, healthcare, and local services. In total, CEA-supported activity accounted for 36 jobs statewide.

Table 7: CEA Economic Output

Impact	*Employment*	*Labor Income*	*Value Added*	***Total Output***
Direct	24	$1,524,935	$2,421,637	$3,994,786
Indirect	6	$389,463	$721,035	$1,182,300
Induced	6	$400,868	$791,812	$1,225,866
Total	**36**	**$2,315,266**	**$3,934,485**	**$6,402,952**

Table 8: CEA Tax Impact

Impact	*State, County, and Subcounty*	*Federal*	***Total***
Direct	$247,147.08	$337,971.96	$585,119.04
Indirect	$93,702.69	$92,280.88	$185,983.55
Induced	$92,493.05	$96,505.47	$188,998.52
Total	**$433,342.81**	**$526,758.31**	**$960,101.12**

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Pre-Development Technical Assistance Services (PTAS)

The PTAS program was established by the Maryland Clean Energy Center (MCEC) to help public, nonprofit, and commercial entities advance clean energy and resiliency projects from concept to implementation. PTAS provides expert guidance and financial support for early-stage project development activities such as feasibility studies, engineering and design assessments, financial modeling, and procurement planning. By reducing upfront technical and administrative barriers, the program enables organizations to make informed investment decisions and position projects for successful financing and construction.

Data for PTAS was obtained from MCEC and its reports. The data were reviewed, compiled, and analyzed to capture program activity and outcomes, including project details, project vendors, spending details and estimated energy savings. BEACON consulted with MCEC staff to review reported activity and obtain additional project details which were reviewed by staff then used to finalize the data for modeling. Only completed projects were included to ensure the analysis reflects actual performance rather than projected or anticipated results.

The PTAS program generated an estimated $35.9 million in total statewide economic output, supporting an estimated 159 jobs and contributing $4.6 million in combined county, state, and federal tax revenues (see Tables 9 & 10).

Of this total, approximately $22.2 million represented direct economic output associated with clean energy project development and project activities or supported through PTAS. These expenditures include costs for feasibility studies, engineering and architectural design, environmental assessments, and the final project award. For example, when a public agency or nonprofit organization uses PTAS resources to evaluate the feasibility of a solar installation, conduct energy modeling, or prepare technical documentation for a microgrid project, the associated spending on consulting, engineering, and project completion directly to Maryland's clean energy economy. These activities also stimulate additional demand within the professional and technical services supply chain, including legal, financial, and permitting support essential to project readiness and completion.

PTAS-supported activities generated an estimated $6.7 million in indirect economic output through these professional and technical service networks. Additionally, the PTAS activities produced over $7.1 million in induced economic output through the household spending of employees engaged in these projects. This induced impact reflects the broader community-level effects of wages supported by PTAS.

Beyond economic output, PTAS financing and services supported employment across a variety of sectors, including engineering, architecture, environmental consulting, construction, and professional services. Direct program activity supported 93 jobs, indirect effects through supplier and partner organizations supported 29 jobs, and induced spending generated an

additional 37 positions across various industries, including retail, healthcare, and local services. Collectively, PTAS-related activity supported 159 jobs statewide.

Table 9: PTAS Economic Output

Impact	*Employment*	*Labor Income*	*Value Added*	***Total Output***
Direct	93	$8,655,528	$13,284,103	$22,158,742
Indirect	29	$2,196,158	$3,939,678	$6,652,905
Induced	37	$2,322,603	$4,571,975	$7,081,758
Total	**159**	**$13,174,289**	**$21,795,756**	**$35,893,406**

Table 10: PTAS Tax Impact

Impact	*State, County, and Subcounty*	*Federal*	***Total***
Direct	$591,209	$1,893,284	$2,484,493
Indirect	$498,327	$512,327	$1,010,655
Induced	$533,357	$557,233	$1,090,590
Total	**$1,622,894**	**$2,962,844**	**$4,585,738**

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Maryland Property Assessed Clean Energy Program (MDPACE)

The MDPACE program provides private financing to commercial property owners for clean energy, resiliency, and environmental remediation projects. Financing typically begins at $50,000 and supports improvements such as energy efficiency upgrades, renewable energy systems, and building resilience enhancements. Participation in the program is voluntary, with repayment made through a property-assessed lien added to the property tax bill. This allows property owners to complete substantial energy-related improvements without significant upfront costs, aligning repayment with long-term energy savings.

Information on MDPACE financing was obtained directly from MCEC and supplemented with case studies of a range of PACE projects to assess program outcomes. The combined dataset included details on financing structures, loan amounts, partner agencies, and project types completed under the program. BEACON reviewed data from both MCEC and other sources, including industry reports to estimate the impacts of the MDPACE project portfolio. These estimations were verified with MCEC staff to be used in the modeling. Additional research was conducted to verify the timing and origination of loans, ensuring an accurate analysis of program activity.

Since its inception, the MDPACE program contributed approximately $230.2 million in total statewide economic output during the analysis period, supported 1,126 jobs, and generated over $28.1 million in combined county, state, and federal tax revenue (see Tables 11 & 12).

Breaking these total impacts down, MDPACE-supported projects generated approximately $149.9 million in direct economic output from 2017 through 2025. This value represents the expenditures associated with design, construction, equipment procurement, and implementation of energy efficiency, renewable energy, and resiliency improvements made possible through MDPACE financing. For example, when a commercial property owner utilizes MDPACE funding to install solar panels, upgrade building insulation, or implement stormwater mitigation measures, the associated spending on materials, engineering, construction labor, and related services contributes to the direct output figure. These projects also stimulate broader economic activity through the clean energy supply chain, manufacturers producing building materials and energy systems, distributors providing specialized components, and service providers delivering design, maintenance, and technical support.

MDPACE-supported activities generated an estimated $47.6 million in indirect output across Maryland's clean energy, construction, and professional services sectors. In addition, as employees involved in these projects earn wages, their spending within local communities creates induced economic output. This reflects the broader induced economic impact of household expenditures supported by MDPACE-related employment. The induced output for 2025 was estimated at $32.7 million.

Beyond economic output, MDPACE financing supports employment across a variety of industries, including construction, engineering, real estate, energy services, and professional consulting. The direct impacts of MDPACE-funded projects supported 722 jobs. The resulting indirect effects through supply chain relationships supported an additional 239 jobs, while induced household spending generated 164 more positions across various industries, including retail, healthcare, and local services. In total, MDPACE-related activity supported 1,126 jobs statewide, underscoring the program's role in advancing commercial clean energy investment, strengthening Maryland's building infrastructure, and promoting long-term economic growth.

Table 11: MDPACE Economic Output

Impact	*Employment*	*Labor Income*	*Value Added*	***Total Output***
Direct	722	$52,670,306	$81,316,296	$149,882,758
Indirect	239	$15,579,274	$26,725,552	$47,631,569
Induced	164	$10,288,472	$21,348,953	$32,673,945
Total	**1,126**	**$78,538,052**	**$129,390,801**	**$230,188,272**

Table 12: MDPACE Tax Impact

Impact	*State, County, and Subcounty*	*Federal*	***Total***
Direct	$5,726,569	$11,308,642	$17,035,211
Indirect	$2,738,977	$3,426,727	$6,165,704
Induced	$2,621,485	$2,268,687	$4,890,172
Total	**$11,087,031**	**$17,004,056**	**$28,091,087**

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Maryland Clean Energy Capital Program (MCAP)

MCAP provides financing solutions that enable businesses, institutions, government entities, and nonprofit organizations to implement clean energy projects. The program facilitates access to affordable capital through both taxable and tax-exempt bond financing, supporting a wide range of energy efficiency and renewable energy initiatives.

Energy savings data for MCAP projects were obtained directly from the Maryland Clean Energy Center and reflect results from projects started between 2012 and 2025. Only estimated realized savings were included in the analysis to ensure an accurate representation of actual performance outcomes. This data highlights the tangible impact of MCAP's financing activities, which have supported the deployment of energy-efficient technologies, renewable energy systems, and building modernization projects that enhance sustainability and reduce operating costs across Maryland. Since its inception in 2012, the MCAP program contributed approximately $108.8 million in total statewide economic output during the analysis period, supported 674 jobs, and added nearly $18.3 million in combined county, state, and federal tax revenue (see Tables 13 & 14).

MCAP-supported projects generated approximately $70.1 million in direct economic output from 2012 through 2025. This value represents the expenditures associated with design, construction, equipment procurement, and implementation of clean energy improvements made possible through MCAP financing. For example, when an entity utilizes MCAP funds to install an energy-efficient HVAC system or solar array, the associated spending on engineering services, construction labor, and materials is captured in the direct output figure. However, these projects also stimulate demand throughout the broader supply chain – manufacturers supplying solar panels or mechanical components, distributors providing equipment, and service providers offering technical or maintenance support.

MCAP supported activities were responsible for an estimated $7.4 million in indirect output across Maryland's clean energy supply chain. Additionally, as employees of firms involved in these projects earn income, they spend a portion of their earnings on goods and services within their local communities. This spending generates induced economic output, reflecting the broader impact of household expenditures supported by MCAP-related employment. The induced output was estimated at $24.3 million.

In addition to economic output, MCAP financing supports employment across multiple sectors, including construction, engineering, manufacturing, and professional services. The direct impacts of MCAP-funded projects supported 518 jobs. The resulting indirect effects through supply chain linkages supported an additional 35 jobs, while induced household spending generated 120 more positions across various industries, including retail, healthcare, and local services. In total, MCAP-related activity supported 674 jobs statewide.

Table 13: MCAP Economic Output

Impact	*Employment*	*Labor Income*	*Value Added*	***Total Output***
Direct	518	$53,032,589	$60,994,410	$77,076,382
Indirect	35	$2,620,547	$4,339,595	$7,445,864
Induced	120	$7,419,275	$16,125,365	$24,273,874
Total	**674**	**$63,072,411**	**$81,459,370**	**$108,796,120**

Table 14: MCAP Tax Impact

Impact	*State, County, and Subcounty*	*Federal*	***Total***
Direct	$2,963,087	$10,634,616	$13,597,703
Indirect	$478,389	$595,471	$1,073,860
Induced	$1,878,915	$1,748,026	$3,626,941
Total	**$5,320,390**	**$12,978,113**	**$18,298,504**

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Maryland Energy Innovation Accelerator (MEIA)

The Maryland Energy Innovation Accelerator (MEIA), is committed to rapidly bringing new solutions and innovations to market to help mitigate and adapt to climate change. MEIA is a part of the climate Technology Commercialization ecosystem and works in conjunction with other entities that also support this industry.

Revenue and expense data for both MCEC and the Maryland Energy Innovation Accelerator (MEIA) program were compiled from annual financial statements provided by MCEC and also available on its website. Financial reports for MCEC covered fiscal years 2009 through 2025, while MEIA-specific data were available for fiscal years 2020 through 2025.

MEIA and MCEC staff provided impact data on the firms that MCEC has assisted with commercialization and deployment of energy and climate technologies. Working with staff, we were able to separate the firms that worked solely with MEIA from firms that worked jointly with MEIA and MEI^2 and those that worked only MEI^2 so that there was no duplication of impact reporting.

Since the program began, the MEIA initiative contributed an estimated $145.4 million in total statewide economic output during the analysis period, supported 439 jobs, and added nearly $16.8 million in combined county, state, and federal tax revenue (see Tables 15 & 16).

MEIA supported projects generated approximately $93.1 million in direct economic output from 2020 through 2025. This value represents the expenditures associated with research, product deployment, manufacturing and the commercial deployment climate tech products and services supported by MEIA activities. For example, when an inventor utilizes MEIA support to develop, test, and then manufacture an energy-saving HVAC control system, the associated spending on engineering services, labor, and materials is captured in the direct output figure. However, these projects also stimulate demand throughout the broader supply chain – manufacturers supplying components, distributors selling the equipment, and service providers offering technical or maintenance support.

MEIA supported activities were responsible for an estimated $30.8 million in indirect output across Maryland's clean energy supply chain. Additionally, as employees of firms involved in these projects earn income, they spend a portion of their earnings on goods and services within their local communities. This spending generates induced economic output, reflecting the broader impact of household expenditures supported by MEIA-related employment. The induced output for MEIA was estimated at $21.5 million.

In addition to economic output, MEIA supports employment across multiple sectors, including engineering, manufacturing, and professional services. The direct impacts of MEIA-funded projects supported 197 jobs. The resulting indirect effects through supply chain linkages supported an additional 129 jobs, while induced household spending generated 113 more

positions across various industries, including retail, healthcare, and local services. In total, MEIA-related activity supported 439 jobs statewide.

Table 15: MEIA Economic Output

Impact	*Employment*	*Labor Income*	*Value Added*	***Total Output***
Direct	197	$23,479,754	$48,084,718	$93,101,521
Indirect	129	$10,601,814	$17,396,484	$30,786,570
Induced	112	$7,007,474	$13,885,520	$21,484,100
Total	**439**	**$41,089,042**	**$79,366,723**	**$145,372,191**

Table 16: MEIA Tax Impact

Impact	*State, County, and Subcounty*	*Federal*	***Total***
Direct	$3,222,551	$5,948,865	$9,171,415
Indirect	$1,862,383	$2,429,984	$4,292,367
Induced	$1,626,433	$1,684,617	$3,311,050
Total	**$6,711,367**	**$10,063,466**	**$16,774,833**

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Recommendations

BEACON was assisted throughout this evaluation by many of the staff at MCEC. Some were within the accounting and compliance operations, but many more were from the individual initiatives. The scope and operations of MCEC have evolved over the past 17 years, during which staffing changes have naturally occurred. As a result, some institutional knowledge regarding past activities and their associated impacts was not readily available, which at times extended the process of assembling a complete and accurate representation of the work performed. Our goal in the project was to model all of the impacts as accurately as possible. This included understanding what types of improvements were completed in the MDHELP and CEA projects for homeowners. We worked to understand the expenditure patterns of the PTAS and MCAP projects. For projects that did not require estimation or measurements of energy savings and the annual dollar value, we had to work with the staff that had knowledge of the programs and research industry data to calculate some impact estimation. In reviewing the impacts of the MEIA, we worked through separating the firms that worked with MEIA alone, and then determining what industry they operated in, and when they began production.

We also know, through our discussions with staff, that MCEC is working to collect a more thorough set of measurements that show a range of impacts of its initiatives. In order to illustrate MCEC's overall impacts, there should be a focus on defining and collecting data showing outcomes that are common for multiple initiatives. Our recommendations are to continue that effort. BEACON is willing to set up a meeting to review the current data collection methods and suggest items or impacts that would be important to collect or measure.

Below are a few of the data points that we would suggest:

- For all projects that will impact energy usage, collect the estimated annual amount and dollar value. While the value will change in future years, the dollar value is an important metric.
- For projects with construction and/or equipment, record the breakdown by broad type, such as HVAC, roofing, insulation/encapsulation, electrical, and so on. If possible, also include the estimated labor component for professional services such as architecture, permitting, construction labor, and others.
- When collecting data on firms assisted by MEIA, the firm's industry (NAICS code), number of jobs new and total, and the number in Maryland, if the company is in development or producing a commercial product or service. Total revenue and other grants and investment should be collected, along with the other patent and licensing data. MEIA should also track if the firm is currently or has previously worked with MEI[2], or might in the next year.