MARYLAND CLEAN ENERGY CENTER

FY 2018 Annual Report

Gearing up for the Future of the Advanced Energy Economy in Maryland

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The Maryland Clean Energy Center (MCEC) was created as an instrumentality of state by the Maryland General Assembly, in 2008, with an economic development mission to advance the adoption of clean energy and energy efficiency products, services and technologies. MCEC also supports innovation and technology deployment to help achieve state renewable energy generation, energy conservation, and greenhouse gas emission reduction goals. MCEC uses statute enabled financing authority to leverage private capital investments and provide financing to assist residential, commercial, municipal, and not-for-profit consumers.

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MARYLAND
CLEAN ENERGY CENTER

Message from the Chairman

Ladies & Gentlemen:

Looking back over the past ten years since the Maryland Clean Energy Center (MCEC) was first established in 2008, the energy landscape in Maryland has changed dramatically. At that time there was a need to stand up a nascent clean energy industry sector, and implement measures to meet state policy goals established to deploy more renewable energy generation, reduce energy demand and curtail greenhouse gas emissions. MCEC has been instrumental in assisting consumers, businesses and policymakers as the energy ecosystem evolved into what it is today. Across the state, more renewable energy powers our homes and offices. Consumers and producers implement cost-effective measures and advanced technologies to reduce demand and increase efficiency, reliability and security of the grid. Marylanders benefit from the associated instate job and wage growth.

Every organization evolves and changes as time goes by, so it is appropriate that MCEC take the opportunity to examine how it can best serve to support the advanced energy economy now and in the future. In the past year, MCEC has leveraged this opportunity by expanding our value proposition and work to support the energy industry and consumer stakeholders in Maryland.

With thoughtful leadership and deliberation over the course of this past fiscal year, the MCEC board and staff developed forward-thinking efforts to advance access to capital for clean energy projects, and expanded the reach of previously established funding programs. Resources have been invested to enhance operational capacity, and plans made to strengthen our new alignment with the Maryland Energy Innovation Institute. Strategies are now being crafted to more effectively engage and support industry partners and ensure future sustainability of the instrumentality.

During FY 2018 MCEC executed over $23MM in bond transactions to finance energy measures, and facilitated greater access to Commercial PACE financing across the state with over $3.2MM in projects financed in MDPACE enabled jurisdictions.

MCEC looks forward to connecting the people, businesses, ideas and resources necessary for Maryland to lead the advanced energy economy. On behalf of my fellow board members, I invite your involvement as we gear up for the future and strive for continued success!

Sincerely,

Geoff Oxnam
CEO, American Microgrid Solutions
MCEC Chairman of the Board

MCEC Board of Directors FY 2018

Geoff Oxnam
MCEC Board Chairman
Founder & CEO
American Microgrid Solutions

Michele Mitch-Peterson
MCEC Board Vice Chair
Business Consultant
Honeywell

Andrea Pelletier
MCEC Board Treasurer
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Dr. Alex Pavlak
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Future of Energy Initiative

Deb Risher
President, Owner
Belair Engineering

Dr. Eric Wachsman
Director
University of Maryland Energy Research Center
William L. Crentz Centennial Chair in Energy Research
University of Maryland
Director
Maryland Energy Innovation Institute
University of Maryland

Ex-Officio
Dr. Mary Beth Tung
Director
Maryland Energy Administration

Executive Summary

As a not-for-profit corporate instrumentality of state, the Maryland Clean Energy Center (MCEC) operates under certain statutorily directed purposes:

- Promote economic development and jobs in the clean energy industry sector in the State
- Promote the deployment of clean energy technology in the State
- Serve as an incubator for the development of clean energy industry in the State
- In collaboration with the Administration; collect, analyze, and disseminate industry data
- Provide outreach and technical support to further the clean energy industry in the State
- Disseminate information and materials that may be pertinent to clean energy technology, education, and deployment of financing, and development in the State, for persons engaged in the clean energy industry as developers, manufacturers, and installers, as well as for consumers and financial institutions, including information on available federal, state, and private financial assistance and technical assistance.

With these broad objectives in mind, MCEC measures the impact of the state investment in advancing clean energy and energy efficiency, both directly and indirectly. In FY 2018, MCEC worked towards advancing access to capital, engaging stakeholders, and enhancing administrative capabilities.

During the FY 2018 period associated with this report, MCEC targeted resources to advance access to capital for clean energy projects, and expand the reach of previously established funding programs. Results include an increase in cumulative bond issuance of 152% in FY 2018, with approximately $23MM in financial transactions executed through the Maryland Clean Energy Capital Program (MCAP). Cumulative bond issuance revenue earned through the period ending June 30, 2018 was $479,390. **Bond issuance and application fee revenue in FY 2018 was $105,000, representing a 27% increase from the FY 2017 cumulative total.** Cumulative administrative and performance related fees earned through the period ending June 30, 2018 were approximately $185,000.

The MD-PACE program is managed by MCEC through a partnership with PACE Financial Servicing (PFS). The program provides access to capital for commercial, industrial, agricultural, and not for profit property owners to make energy improvements with upfront capital and advantageous financing. In FY 2018 MCEC and its partner worked to expand the number of jurisdictions enabled and set up to administer PACE financing.

At the time of this report, 15 of the major jurisdictions had passed enabling ordinances, and 13 had program administration capability in place. Two additional counties with C-PACE are enabled in the state, but self-administered rather than part of the MD-PACE program. Those are Montgomery and Prince George's Counties.

Since the introduction of PACE enabling legislation in 2014, almost $20MM in project financing has been recorded state wide, an increase of $14MM from the $6MM reported in FY 2017. Of the total amount in

projects financed, approximately $3.2MM has been recorded for projects in the MD-PACE program specific affiliated jurisdictions.

Initiatives were undertaken during FY 2018 to enhance operational capacity, and improve stakeholder outreach and engagement to re-establish MCEC in the marketplace as a result of a multiyear funding commitment awarded in FY 2017. MCEC added personnel with finance and communications expertise to its staff, and relaunched a social media presence. The independent audit looking at the financial statements of the organization for FY 2018 reports that MCEC is in a strong position to move forward in delivering its mission.

Events were planned and hosted during this period to engage and support industry partners. The annual MCEC Legislative Reception was well attended and MCEC tracked policy introduced during the 2018 General Assembly session with regular reports issued to industry stakeholders. Coordination and promotion of the 2018 Maryland Clean Energy Summit occurred in FY 2018. The conference summary will be included in the FY 2019 Annual Report.

Throughout FY 2018, MCEC participated in the study processes led by the Maryland Power Plant Research Program (PPRP), seeking to recommend future regulatory guidelines for the Renewable Portfolio Standard (RPS), and to facilitate adoption of Energy Storage technologies in grid modernization.

In this past fiscal year, the Board began working on a strategic plan to ensure future sustainability of the instrumentality, and as requested by the General Assembly, is preparing to issue a report with its findings and recommendations in December of FY 2019.

Since the beginning of FY 2018, plans have been in the works to relocate MCEC offices to College Park near the University of Maryland campus to strengthen MCEC alignment with the Maryland Energy Innovation Institute. The move is anticipated to take place in spring of FY 2019.

As one of a number of entities working to influence progress on statewide goals to advance the energy economy, MCEC tracks certain indicators including the greenhouse gas emissions reduction goal of 40% by 2030, the Renewable Portfolio Standard (RPS) goal of 25% by 2020 with a 2% carve out for solar generation specifically, and the demand reduction goal for energy consumption for reduced demand of 15% by 2015.

As seen in this report, data tracked annually by MCEC looks at energy industry jobs and wages data annual to better understand trends in industry growth. Analysis of the North American Industry Classification System (NAICS) for the Maryland energy sector over the past five years indicates Maryland is benefitting from marked growth in jobs and wages.

Advancing Access to Capital & Finance Programs

The Maryland Clean Energy Capital Program (MCAP) provides access to private capital through the issuance of tax-exempt and taxable bonds. As a public instrumentality of the State of Maryland, MCEC is authorized by its enabling statue to be an issuer of tax-exempt debt for projects that support the advancement of clean energy, economic development, energy innovation and related jobs creation in the State.

MCEC works with both public and private project development partners to provide advantageous financed using its authority to issue tax-exempt and taxable bonds as well as own, operate and lease assets.

In FY 2018 MCEC issued two bonds totaling $22,966,391. Bond proceeds and additional sources of capital will be used to fund over $28,000,000 in energy efficiency capital projects at the University of Maryland, College Park and the University of Maryland, Institute of Bioscience and Biotechnology Research. The FY 2018 projects are guaranteed to provide annual energy savings in excess of $2,000,000 and upon completion the projects, coupled with MCAP projects previously completed, will provide MCEC customers with annual energy savings in excess of $3,500,000. During FY 2018, MCEC began working on various energy efficiency and waste to energy transactions and is optimistic about issuing tax-exempt bonds to finance these developing projects in the future.

Cumulative MCAP bond issuance through the period ending June 30, 2018 is $33,015,456 for tax-exempt bonds and $5,090,243 for taxable bonds. Cumulative bond issuance increased 152% in FY 2018. Proceeds from the seven bonds issued under MCAP were used to fund energy efficiency, mechanical equipment upgrades and renewable energy production including capital improvements for lighting, HVAC, solar hot water heaters, boilers, chillers, building envelop renovations, water conservation measures, combined heat and power systems, demand response systems, construction management, capitalized interest and cost of issuance.

MCAP Revenues

Cumulative bond issuance revenue earned through the period ending June 30, 2018 was $479,390. **Bond issuance and application fee revenue in FY 2018 was $105,000, representing a 27% increase from the FY 2017 cumulative total.**

Cumulative administrative and performance related fees earned through the period ending June 30, 2018 were approximately $185,000.

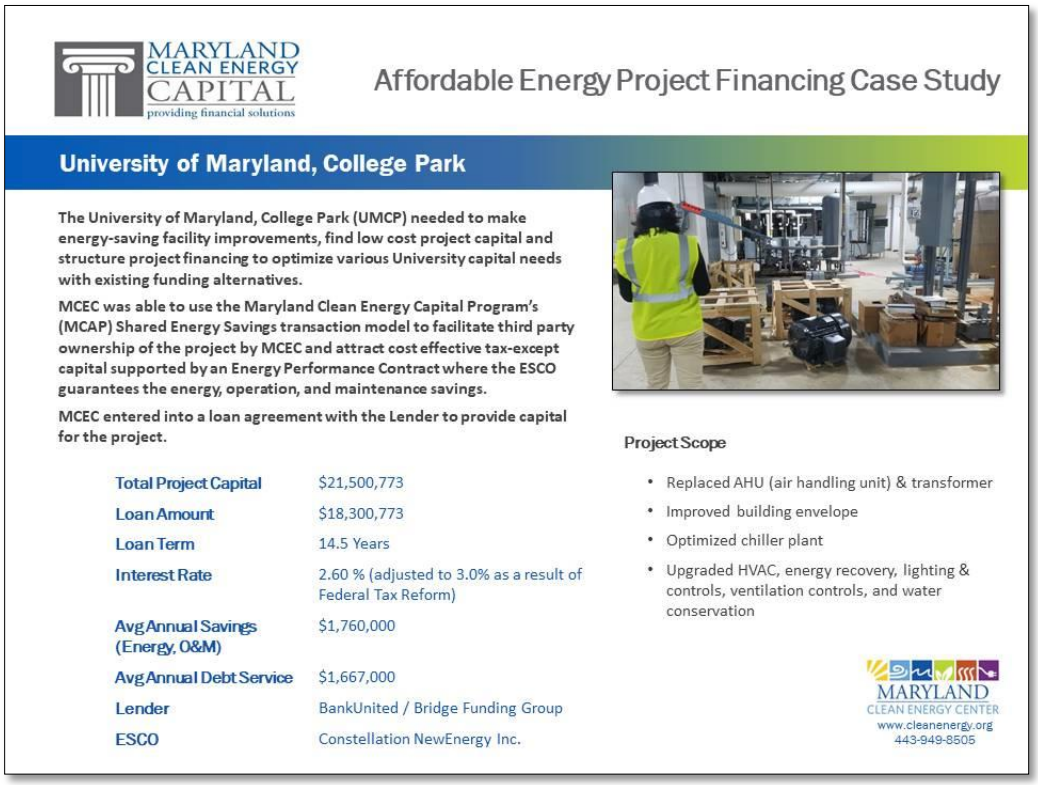
MCEC earns administrative fees for its role in managing the annual project cash flows to ensure timely debt services and vendor payments in addition to IRS post-issuance compliance measures and where applicable, energy savings measurement and valuation analysis. MCEC earns performance payments specifically for Energy Performance Contract financings where MCEC owns project assets that achieve energy savings in excess of the annual guaranteed savings amount.

Administrative and performance related revenue in FY 2018 was $49,698 and represents a 37% increase from the FY 2017 cumulative total.

FY 2018 MCAP Project Highlights

On November 20, 2017, MCEC issued a tax-exempt revenue bond in the amount of $18,300,773.18 for the acquisition and construction of energy conservation measures implemented on the University of Maryland College Park (UMCP) campus.

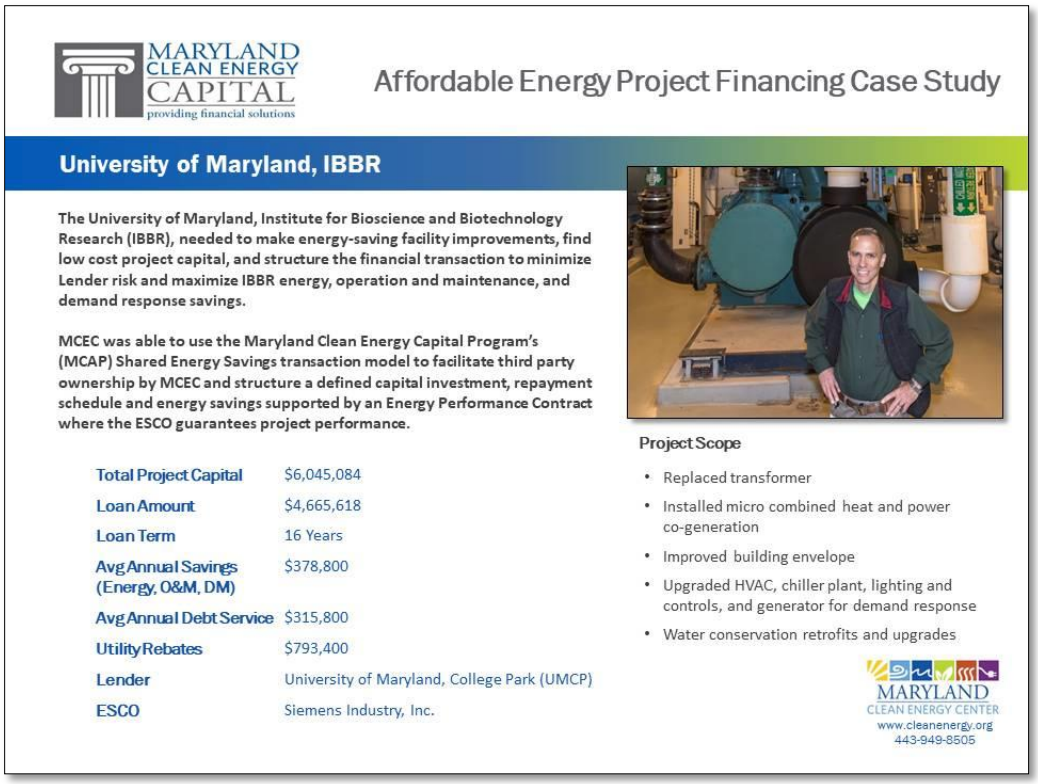
The Center entered into a shared energy savings agreement with University of Maryland, College Park and a corresponding Energy Performance Contract (EPC) with an Energy Savings Company (ESCO). The EPC is an agreement with Constellation NewEnergy, Inc. to install the equipment on the University's premises, comprised of certain facility renewal and energy efficiency measures and to guarantee certain energy and operational savings. Annual energy savings are guaranteed by Constellation NewEnergy, Inc., among other project related operation and maintenance savings.



On February 16, 2018, MCEC issued a taxable revenue bond in the amount of $4,665,618.00 for the acquisition and construction of energy conservation measures implemented on the University of Maryland, Institute for Bioscience and Biotechnology Research (IBBR) campus.

The Center entered into a shared energy savings agreement with the University of Maryland, College Park for a project at the Institute for Bioscience and Biotechnology Research and a corresponding Energy Performance Contract (EPC) with an Energy Savings Company (ESCO). The EPC is an agreement with Siemens Industry, Inc. to install the equipment on the University's premises comprised of certain facility renewal and energy efficiency measures and to guarantee certain energy and operational savings.

Annual energy savings are guaranteed by Siemens Industry, Inc. among other project related demand response, operation and maintenance savings.



MARYLAND CLEAN ENERGY CAPITAL
providing financial solutions

Affordable Energy Project Financing Case Study

University of Maryland, IBBR

The University of Maryland, Institute for Bioscience and Biotechnology Research (IBBR), needed to make energy-saving facility improvements, find low cost project capital, and structure the financial transaction to minimize Lender risk and maximize IBBR energy, operation and maintenance, and demand response savings.

MCEC was able to use the Maryland Clean Energy Capital Program's (MCAP) Shared Energy Savings transaction model to facilitate third party ownership by MCEC and structure a defined capital investment, repayment schedule and energy savings supported by an Energy Performance Contract where the ESCO guarantees project performance.

Total Project Capital	$6,045,084
Loan Amount	$4,665,618
Loan Term	16 Years
Avg Annual Savings (Energy, O&M, DM)	$378,800
Avg Annual Debt Service	$315,800
Utility Rebates	$793,400
Lender	University of Maryland, College Park (UMCP)
ESCO	Siemens Industry, Inc.

Project Scope

- Replaced transformer
- Installed micro combined heat and power co-generation
- Improved building envelope
- Upgraded HVAC, chiller plant, lighting and controls, and generator for demand response
- Water conservation retrofits and upgrades

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Maryland Property Assessed Clean Energy (MD-PACE) Commercial Lending Program

MARYLAND COMMERCIAL PACE
property assessed clean energy loans

MCEC continued to enable access to affordable, 100% up front capital to assist retail, commercial, industrial, agricultural, and not-for-profit property owners, through the **MD-PACE (Property Assessed Clean Energy) Loan Program**.

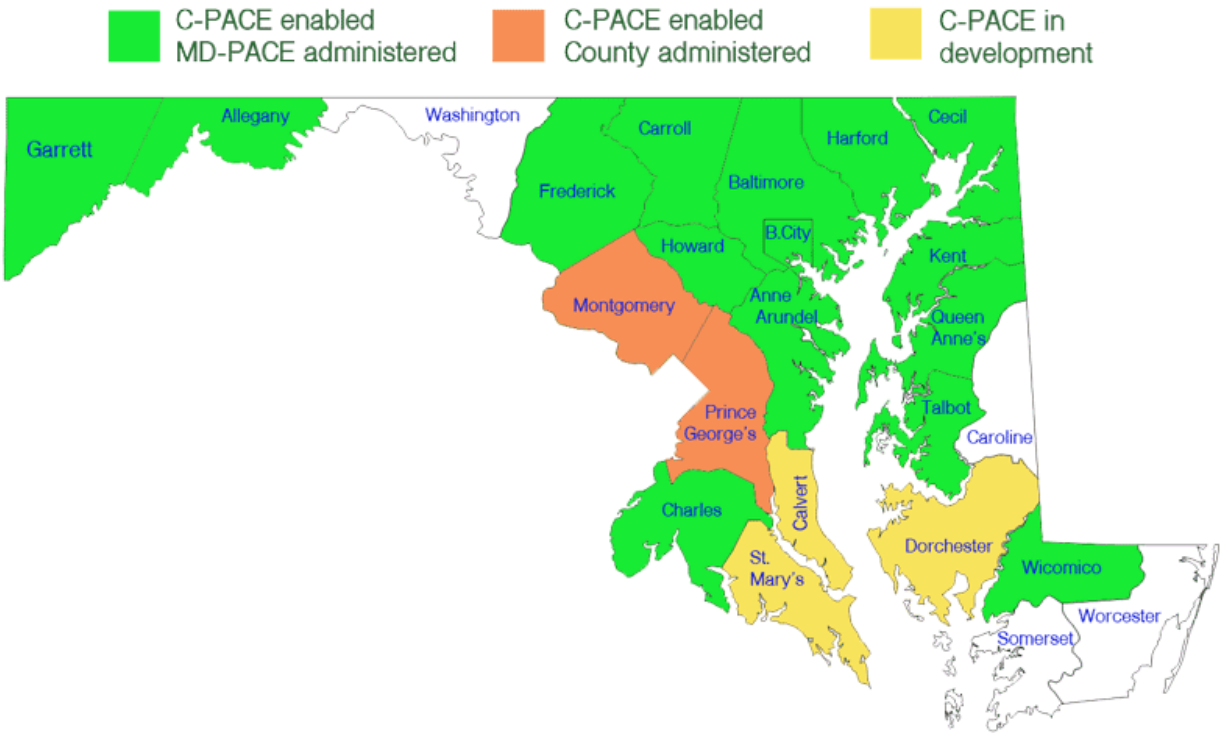
MD-PACE is administered through a partnership with Pace Financial Servicing, LLC and requires an enabling ordinance at the local level. MCEC worked with several counties and Baltimore City to facilitate the process of enacting local enabling ordinances and developing functioning PACE programs.

At the time of this report, 15 of the major jurisdictions had passed enabling ordinances, and 13 had program administration capability in place. Two additional counties with C-PACE are enabled in the state, but self-administered rather than part of the MD-PACE program. Those are Montgomery and Prince George's Counties. See Exhibit A.

The number of contractors participating in the program during the period was 44 and the number of eligible capital providers enrolled is now 12, compared to 53 and 11, respectively, in FY 2017.

Five PACE transactions closed under the MD-PACE program in FY 2018, totaling $3,207,112.18 in capital provided to commercial real estate owners for energy related capital improvements.

Exhibit A: MD-PACE Map of County Program Status



Since the introduction of PACE enabling legislation in 2014, almost $20MM in project financing has been recorded state wide, an increase of $14MM from the $6MM reported in FY 2017. Of the total amount in projects financed, approximately $3.2MM has been recorded for projects in the MD-PACE program affiliated jurisdictions. C-PACE has financed everything from major office buildings and medical centers to youth camps and small, main street businesses in the state of Maryland.

These investments are represented in 19 projects executed statewide, 5 within in MD-PACE program affiliated jurisdictions, and 10 in Montgomery County. Deal flow growth is projected in the pipeline for Q4 2018 and Q1 2019 with 5 projects lined up in the City of Baltimore, alone.

Mid- Atlantic PACE Alliance Grant

MCEC represents Maryland as a partner in the Mid-Atlantic PACE Alliance (MAPA), along with the Virginia Department on Mines, Minerals and Energy (DMME) and the District of Columbia Department of Sustainable Energy & Environment. Funded by a three-year grant from the U.S. Department of Energy, the group is striving to advance the development of standardized programs and ramp up the use of PACE financing in the region.

MCEC received grant funds in the amount of $99,688 and is working with the partnership to achieve certain key deliverables defined in the grant. These include outreach and education events, development of guidelines for standardization of PACE programs across the region, case studies of financed projects, and $80MM in transactions for projects financed across the region.

MARYLAND COMMERCIAL PACE

CASE STUDY:

FINISHING TOUCH

A CHESTERTOWN SHOP

PROJECT OVERVIEW

PROPERTY TYPE:
Small Commercial Retail

INSTALLED MEASURES:
High Efficiency Windows, HVAC System

$134,408
Approved PACE Financing

20 Years
Term

Greenworks Lending
Lender

Havetech
Project Partner

MID-ATLANTIC PACE ALLIANCE
pacealliance.org

THE CHALLENGE:

The Finishing Touch, a custom frame and print boutique in downtown Chestertown, MD, had air conditioners and windows that dated back to 1978. These outdated HVAC systems were inefficient and expensive to operate.

THE SOLUTION:

The Chestertown retail shop worked with MD-PACE to deploy $134,408 of C-PACE financing toward HVAC upgrades, and the replacement of more than 1,000 square feet of low R-value glass. The retrofits improved the building's overall energy efficiency, year-round. The building is expected to save approximately $7,000 in the first year, and $300,704 in lifetime savings.

MARYLAND CLEAN ENERGY CENTER

PACE Financial SERVICING

To learn more about MD PACE:
md-pace.com
443-910-4932
info@md-pace.com

ABOUT MD-PACE

MD-PACE is a statewide partnership between PACE Financial Servicing and the Maryland Clean Energy Center to build a statewide commercial Property Assessed Clean Energy (C-PACE) program.

MARYLAND COMMERCIAL PACE

CASE STUDY:

MULTI-FAMILY RE-DEVELOPMENT

PROJECT OVERVIEW

PROPERTY TYPE:
Multi-Family Housing

INSTALLED MEASURES:
High Efficiency Boiler Replacement

$4,816,131
Approved PACE Financing

20 Years
Term

Greenworks Lending
Lender

Boland
Project Partner

THE CHALLENGE:

A multi-family property management firm needed to replace obsolete boilers in 11 tenant-occupied buildings across state/district borders of Maryland and Washington, D.C., before the winter season.

THE SOLUTION:

The project owner worked with MD-PACE to integrate $4,816,131 of C-PACE financing into the properties to replace the old boilers with high efficiency boilers. The buildings, together, are expected to save $843,258 in the first year, and $3,767,263 in lifetime savings.

MID-ATLANTIC PACE ALLIANCE
pacealliance.org

MARYLAND CLEAN ENERGY CENTER

PACE Financial SERVICING

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ABOUT MD-PACE

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MARYLAND COMMERCIAL PACE

CASE STUDY:

SOCIAL SERVICES CENTER

A BALTIMORE-BASED NON-PROFIT

PROJECT OVERVIEW

PROPERTY TYPE:
Multi-Family Housing

INSTALLED MEASURES:
Insulation and Building Envelope Improvements, New HVAC and Electrical Installation

$785,000
Approved PACE Financing

20 Years
Term

Greenworks Lending
Lender

THE CHALLENGE:

A Baltimore-based non-profit wanted to expand the capabilities of its residential re-entry center by building out 5,000 square feet of unused space in their facility. The goal of this project was to complete the planned build out while incorporating energy and water efficient equipment.

THE SOLUTION:

The project owner worked with MD-PACE to deploy $785,000 of C-PACE financing into the build out of a new energy-efficient wing to their facility. The project is expected to save $3,100 in the first year after the build out is completed, and $80,000 in lifetime savings.

MID-ATLANTIC PACE ALLIANCE
pacealliance.org

MARYLAND CLEAN ENERGY CENTER

PACE Financial SERVICING

To learn more about MD PACE:
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ABOUT MD-PACE

MD-PACE is a statewide partnership between PACE Financial Servicing and the Maryland Clean Energy Center to build a statewide commercial Property Assessed Clean Energy (C-PACE) program.

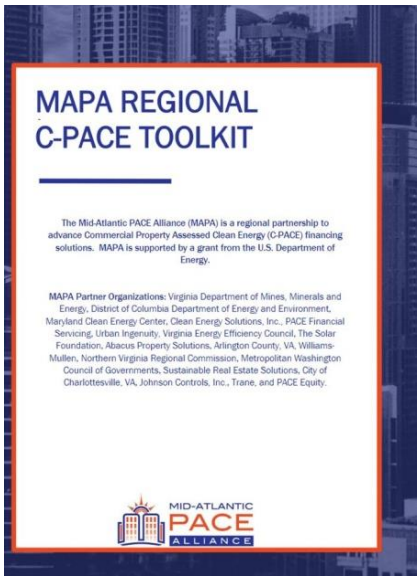
Winning with PACE Regional Forum

As a deliverable associated with the grant award MAPA, and partners including MCEC, held a regional forum on November 13, 2017, at the headquarters of the Metropolitan Washington Council of Governments, in Washington, DC. The program was designed to build awareness and share best practices between industry and government, contractors and building owners, and program managers. Over 100 registered attendees participated in the event.

Regional Commercial PACE Toolkit Published

During FY 2018 MAPA produced a tool kit offering guidance on program development and management to encourage jurisdictions, which have or wish to enable commercial PACE lending programs, to standardize program regulations and policies within the regional framework. MCES and its CPACE partner PACE Financial Servicing (PFS) shared their experience and assisted with the creation of the guideline.

The MAPA Regional C-PACE Toolkit is available online at: https://www.pacealliance.org/toolkit



The State of Maryland and several highly populated jurisdictions were awarded allocations of Qualified Energy Conservation Bonds (QECBs) through a federal government program. These debt instruments were designed to provide low cost capital for qualified energy conversation projects. Maryland initially received $58.4MM in QECB allocations with approximately $6.5MM allocated to the State and the remaining balance allocated at the local government level. As of January 1, 2018, the unused authority for QECBs residing in local County/City jurisdictions was approximately $42MM. The State of Maryland issued its entire initial allocation of QECBs in 2011.

Working with program partners from Clean Source Capital during FY 2017, MCEC was engaged in outreach efforts to encourage the use of available QECBs for project financing. In FY 2018, MCEC partnered with the Maryland Energy Administration to encourage counties with remaining allocation to use them in a timely manner and investigate a path to capture and redistribute unused allocation from one county to another or for state sponsored projects, if so desired.

As a result of the Tax Cuts and Jobs Act (HR 1) signed into law by President Trump on December 22, 2017, unused authority for Qualified Energy Conservation Bonds (QECBs) has been eliminated effective January 1, 2018.

This change occurred as a result of section 13404 of the Tax Cuts and Jobs Act, which repeals tax credit bonds. Issuers of QECBs that elected to receive direct payments from the Treasury issued on or before December 31, 2017, consistent with the Internal Revenue Code (Section 54D), will continue to receive direct payments. Holders of tax credit bonds issued before December 31, 2017, consistent with the Internal Revenue Code (Section 54D), will receive tax credits for the life of the bond.

Stakeholder Outreach & Engagement

2018 Policy Watch & Legislative Reception

With the passage of the Maryland Energy Innovation Act in 2017, the Maryland Energy Administration asked MCEC to be less directly engaged in taking positions on policy as it is being debated, unless there might be a direct impact on MCEC. Consequently, MCEC acts in a convening and informing capacity with regard to the legislative process.

Each year MCEC monitors the activity of the General Assembly, monitoring for policy actions that could impact the energy industry sector. A weekly report, identifying specific proposed legislation, is circulated to the MCEC subscriber base to increase stakeholder awareness.

MCEC hosted the 2018 Legislative Reception in Annapolis on February 6, at the Governor Calvert House. Attendees included 145 stakeholders and 12 legislators. There was a reduction in attendance, but for the first time, MCEC charged a registration fee for general admission.

The agenda included speakers from various departments in the Hogan administration who presented metrics they track indicative of progress toward meeting state RPS, energy conservation and greenhouse gas reduction goals, as well as job and wage growth realized in the Maryland energy economy in the past year**.**

Clockwise from top left:

MCEC Board Chair, Geoff Oxnam, offers remarks; Laura Franke (PFM) and Jeff Jerome (BGE) engage in conversation; Brian Hug (MDE) speaks while fellow panelists, Susan Gray (PPRP) and Brandon Butler (DLLR), view his presentation; Audience engaged by program presentation.

2018 Maryland Clean Energy Summit Planned for FY 2019

Planning and fundraising took place during FY 2018 for MCEC to host the 2018 Clean Energy Summit on October 8 - 10, in College Park, Maryland. The Board selected the theme "Gearing up for the Future: Energy Innovation to Advance Grid Efficiency, Resiliency & Security" for the three-day event, which was to include an Innovation Exchange focused on related new technologies.

PPRP (Power Plant Research Program) Study Work Group Participation

During FY 2018 MCEC staff participated on Maryland Power Plant Research Advisory Committee Work Groups, in response to the charge mandated by the Maryland General Assembly in 2016 to study the state Renewable Portfolio Standard (RPS) and recommend future action the policy body might take to enhance the market driving regulation. An interim report is due to be presented in December 2018.

> "PPRP shall conduct a study of the RPS… The study shall be a comprehensive review of the history, implementation, overall costs and benefits and effectiveness of the RPS in relation to the energy policies of the state." - HB 1414

MCEC was also engaged as part of a mandated study to recommend how the state should advance Energy Storage capacity and technologies.

MCEC FY 2018 Advisory Council

As per its enabling statute, the MCEC Board annually appoints a group of diverse stakeholders which meet annually to provide guidance on policy priorities and activities of the center. The MCEC Board opted not to appoint new members of the Council for FY 2018, retaining eligible members of the 2017 Council during the FY 2018 period.

Indicators of Progress: Advancing the Energy Economy in Maryland

As the most recent data shows, Maryland continues to be a national leader in clean energy, and on a trajectory to meet ambitious goals that require the coordinated innovation in policy, finance, technology and workforce development. MCEC is one of many entities working to influence these trends.

Progress measured in a macro view toward desired outcomes takes into account the policy goals adopted by the general assembly, including the greenhouse gas emissions reduction goal of 40% by 2030, the Renewable Portfolio Standard (RPS) goal of 25% by 2020 with a 2% carve out for solar generation specifically, and the demand reduction goal for energy consumption for reduced demand of 15% by 2015, with a 2% escalation until 2023.

MCEC also looks at energy industry jobs and wages data annually to determine growth or contraction as an important indicator of progress of growing the energy economy in the state. Growth in the number of jobs and establishments reporting, as well as growth in earnings is seen in the analysis over the most recent five-year period.

Greenhouse Gas Emissions Reduction

The original greenhouse gas reduction goal (GGRA) was adopted by Maryland policymakers in 2009, but was reauthorized and enhanced in 2016.

Core elements of the law, include:

- Retain the 25% reduction by 2020 (2009 law)
- Increase the goal to 40% reduction by 2030 (2016 law)
- Include a qualifier that effort to implement must produce a net economic benefit to the State's economy and a net increase in jobs in the State. Exhibit B provides a snapshot of progress Maryland is making toward achieving the GHG emissions reduction goal set by policymakers for the state. The metrics are trending in the right direction, but there are still emission reductions to be captured by the 2020 goal deadline.

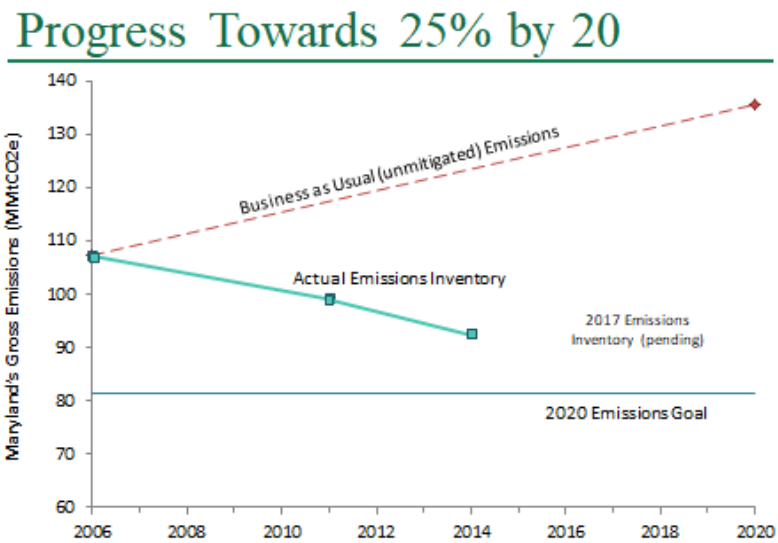


Exhibit B *Source: Maryland Department of the Environment*

The Maryland Climate Change Commission has been tasked with developing strategies to implement toward achieving this goal successfully in the future.

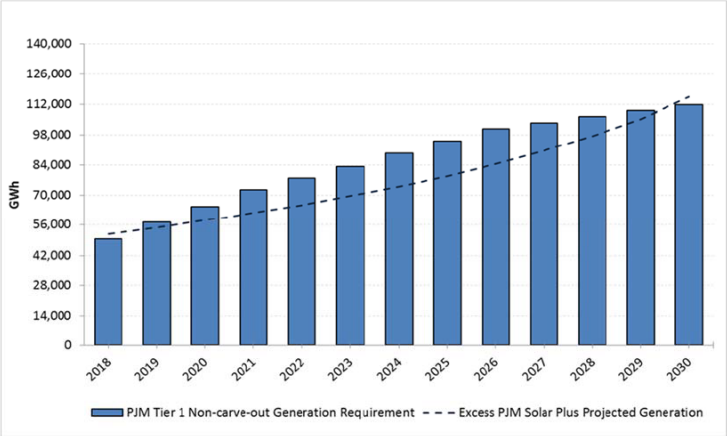
RPS and Renewable Energy Deployment

The Maryland Renewable Portfolio Standard (RPS) requires a specific percentage of the power served to Maryland energy consumers is provided from renewable sources. The required percentage and eligible sources included in the mix are regulated. Since the policy was first adopted, substantial progress towards achievement of the current goals is evident.

The Maryland Power Plant Research Program report, "2017 Inventory of Renewable Energy Generators Eligible for the Maryland Renewable Energy Portfolio Standard" (August 2018 Revised Draft), indicates the current availability of renewable resources and the amount of growth needed to meet the RPS requirements for Maryland along with other states in PJM. The analysis shows that compliance with the non-carve-out Tier 1 category represents the only possible challenge for meeting Maryland RPS requirements, with projections slightly short of the 2020 goal. See Exhibit C.

Exhibit C

Figure ES-1. Non-carve-out Tier 1 RPS Requirements in PJM Compared to Projected Available PJM Renewable Energy Generation (2018-2030) (GWh)



However, the data shows the state will easily meet or exceed the 2% carve out goal for solar within the same time frame.

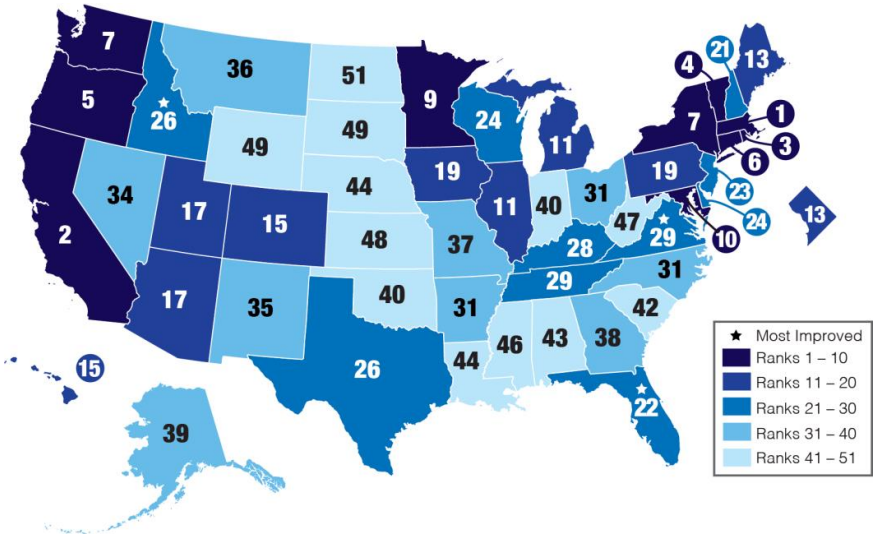
Energy Efficiency & Conservation

Maryland has policy and incentives in place to fund efforts that drive energy efficiency and conservation of energy consumed. The original goal, adopted for demand reduction in overall energy consumption of 15% by 2020, was adjusted in 2016 by the Maryland Public Service Commission (PSC) (Order # 87285) and was codified by the General Assembly, to a further reduction of 2% of utilities weather normalized gross retail sales, baselined in 2016. In 2020, the 2% reduction goal remains but the baseline is adjusted to the 2018 weather normalized gross retail sales, and continues in this pattern until 2023, when the regulation calls for re-evaluation.

The PSC tracks progress toward this goal. Maryland achieved the 15% reduction in peak demand electric consumption by 2015, but fell slightly short of achieving 15% reduction in per capita in that same time

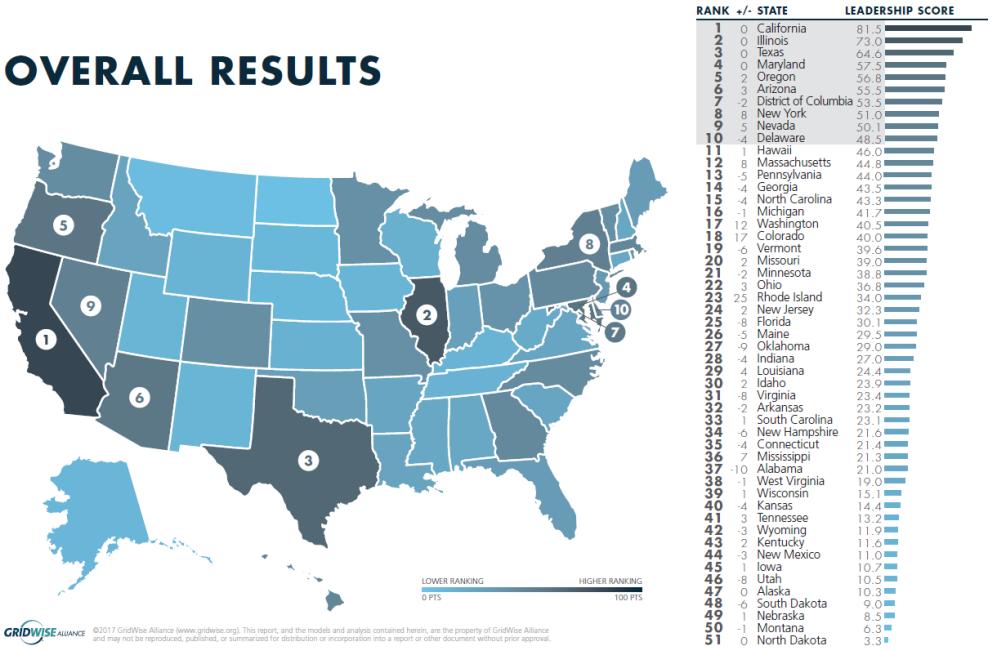
frame. In terms of tracking progress toward the revised goals it is too early in the new cycle to evaluate overall achievement, but indications are that progress is being made.

The American Council for an Energy-Efficient Economy (ACEEE) acts as a catalyst to advance energy efficiency policies, programs, technologies, investments, and behaviors. ACEEE releases an annual State Scorecard, which evaluates how well residents and businesses across the country are doing in saving energy and money thanks to smart state policies. According to the 2017 scorecard released in FY 2018, Maryland is in the top 10 in the nation, and well ahead of our neighboring states based on this measure of success.



Grid Modernization

The adoption rate of technologies and solutions, as well as the capital investment made to ensure the power grid is efficient, resilient and secure is an indicator of the progress being made in the state toward building an advanced energy economy.



The GridWise Alliance released the "Grid Modernization Index 4" Report, in November 2017, examining the work being done state by state to modernize the nation's electricity transmission and distribution system to maintain a reliable and secure energy infrastructure network. Maryland ranks 4th in the nation with the combined set of indicators tracked in the report.

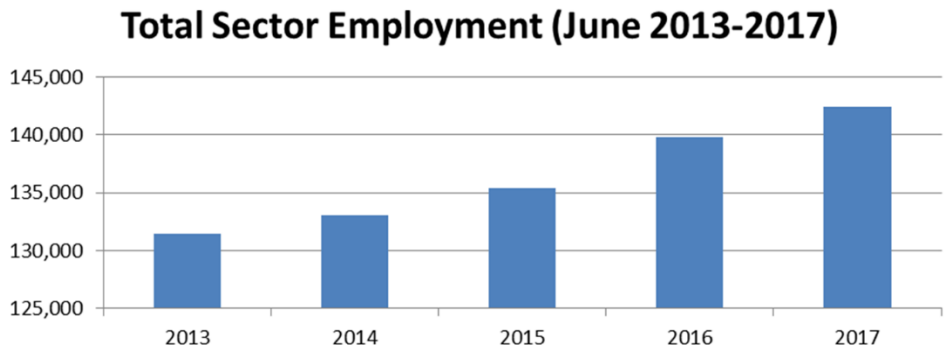
Job Creation & Wage Growth

Jobs and wages might be the most significant indicator of success in growing the energy sector in Maryland, and associated data shows fairly consistent increases realized in the state since 2013.

MCEC collected and evaluated certain data points based on the use of the North American Industry Classification System (NAICS), the standard used by Federal agencies to classify business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. The 2013-17 MCEC Employment and Wages Report is derived from the most recently available (2nd quarter of 2017) Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW).

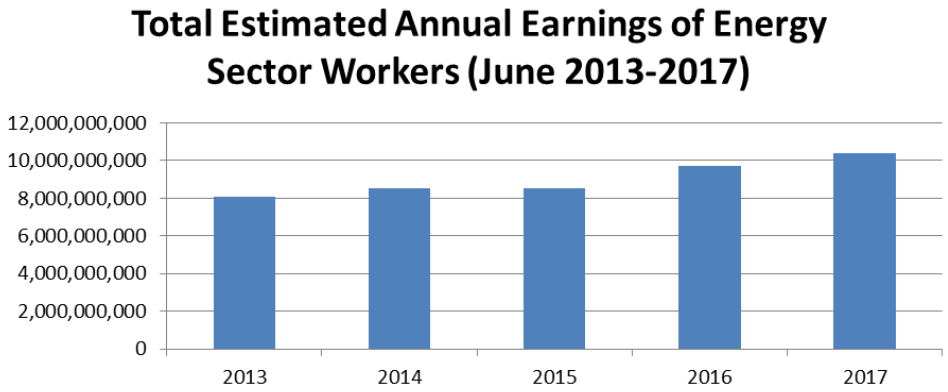
Exhibit D offers a comparison of data from 2013 to 2017, showing total employment in the Maryland energy industry sector increased by 10,961 jobs.

Exhibit D



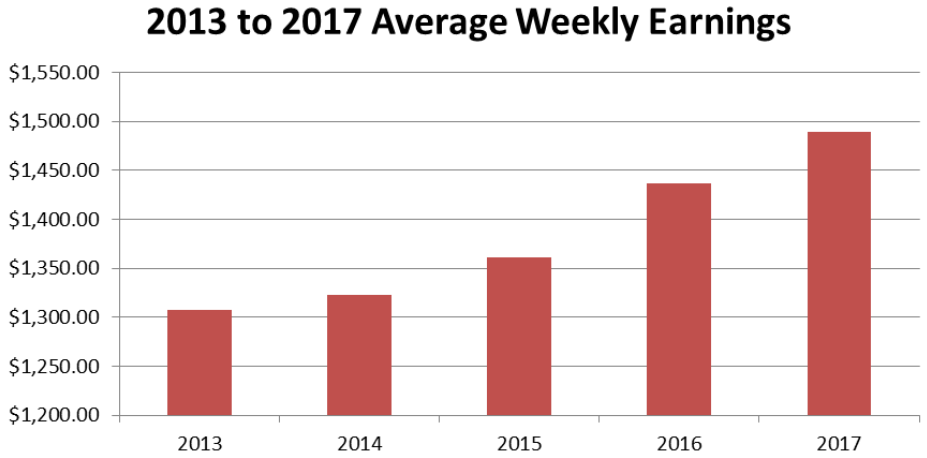
The report shows corresponding increases in the collective estimated annual earnings of all workers in the energy sector for the period increased from $8.067 Billion in 2013 to approximately $10.418 Billion in 2017. See Exhibit E.

Exhibit E



In terms of average wages, during the 2nd quarter of each year from 2013 to 2017, sector-wide average weekly earnings also rose from $1,307.81 to $1,488.97. See Exhibit F.

Exhibit F



Funding Support & Budget

The Maryland Clean Energy Center operating budget in FY 2018 was based on $1,139,185 in overall operating revenue and $698,523 in overall operating expenses. Sources of revenue for MCEC in FY 2018 included: grants, excess energy savings revenue, project fees, sponsor and event revenue, default loan revenue, bond administration revenue, donations and contributions, and miscellaneous earned interest income.

In FY 2018, a total of $698,523 was expended in operating expenses, with funds invested to support administration of the Maryland Clean Energy Capital (MCAP) and Maryland Property Assessed Clean Energy (MD-PACE) programs, Maryland Home Energy Loan Program (MHELP) program closing activities, as well as education and outreach, support of Board activities, and general administrative operations.

Budgeted operating expense categories included: salaries and fringe benefits; consultants and professional fees; rent, phone travel & office expenses; IT services, printing & publications; advertising, dues and subscriptions.

A copy of the "FY 2018 Maryland Clean Energy Center Financial Statements June 30, 2018" can be found online at https://mdcleanenergy.org/sites/default/files/MCEC%20Financial%20Audit%202018_0.pdf

MCEC FY 2019: Gearing up for the Future

Looking ahead to 2019, MCEC will continue to play its role as a unique funding authority, and be engaged in building relationships with industry stakeholders and potential project partners. The board and staff are looking to serve the larger clean and advanced energy "ecosystem" of business, industry, and other agencies, with a broader agenda to meet current needs and fill identified gaps in the Maryland clean energy environment.

As part of a strategic plan development process began in FY 2018, MCEC will focus on defining its value proposition in the marketplace, and identify strategies that can be implemented to insure future efforts are impactful and the organization is sustainable.

Facilitate Access to Captial

- Expand the pipeline of financeable projects, investigate diverse funding sources, and business models.

Serve as a Convener

- Enhance the MCEC profile in the marketplace, expand relationships with industry stakeholders, and solicit industry feedback on building the advanced energy economy of the future in Maryland.

Enable Access to Markets

- Broaden MCEC capacity for outreach and education to facilitate B2B networking and access to markets for energy innovation; host events like the 2018 Maryland Clean Energy Summit, and workshops targeted to open pathways to business opportunities.
- Promote energy innovation and provide access to technical support for entrepreneurs working in the field.

Provide Relevant & Timely Information

- Engage policy makers, influencers and regulators. Follow and report on energy policy initiatives at the Federal, State and local level, as resources allow.
- Reintroduce a quarterly newsletter, and relaunch a refined MCEC website.

"Maryland Clean Energy Center shall establish a work plan to become self–sustaining within 5 years after the effective date of this Act using funding provided under this Act and other funding that the Center may obtain, and projected revenues from project financing activities of the Center under Title 10, Subtitle 8 of the Economic Development Article."

The law directs MCEC to: "submit a report, which may be part of its annual report, on or before December 1, 2019, to the Governor and, in accordance with § 2–1246 of the State Government Article, the General Assembly on the Center's:

1) progress since enactment of this Act to become self–sustaining with its current activities and funding and revenue levels; and

2) recommendations for changes, including additional necessary funding, to continue on the trajectory path to reach the goal to become self–sustaining within 5 years.

SB313 Maryland Energy Innovation Institute; Ch. 365

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