



FY 2021

ANNUAL REPORT

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Message from the Chairman

As Chairman of the Board it is my privilege to present this Annual Report with a review of activity and accomplishments of the instrumentality during Fiscal Year 2021.

MCEC is making an impact. Despite the ongoing challenges of the global pandemic, MCEC has adapted and met the challenge of being under quarantine head on. MCEC continued to deliver on our mission, with focus on pertinent educational outreach, mobilizing capital, providing technical and procurement support, and advancing clean tech innovation. **Since it began operation in 2009, MCEC has leveraged over \$129 MM in private capital to achieve its mission.**

MCEC is using its convening ability to broaden awareness and facilitate business success in the energy sector. In FY 2021 the Center successfully maintained its standard of quality outreach and educational programming with a number of well attended virtual meetings and webinars offered over the course of this period. The Connecting to the Energy Economy Speaker Series and Policy Watch Webinars covered topics of timely importance to our stakeholder audience and its evolution in Maryland.

MCEC is paving the way to implement needed energy improvements and move projects ahead faster. Over the past twelve months MCEC replaced and added key staff to enhance its ability to move energy projects to market and mobilize capital for project implementation. Acting as a neutral third-party advisor, MCEC contributed technical and procurement expertise to public-private partnerships including one to assist Baltimore City Public Schools with energy performance contracting and another to enable Morgan State University to engage a vendor to design, finance ,and implement energy and resilience measures through a multi-party Master Services Agreement. MCEC also partnered with Montgomery County Green Bank to secure Maryland Public Service Commission approval of a public-private partnership to help residential consumers finance energy improvements. Plans are currently underway to launch the Clean Energy Advantage lending program in 2022.

MCEC is advancing innovation and entrepreneurship in the cleantech sector to help grow the economy Maryland. Now in its second full year, the Maryland Energy Innovation Accelerator, a program of MCEC, is successfully launching cleantech solutions from labs to market. During FY 2021, MEIA helped Startups form around cutting edge technologies, assisted with tech-to-market strategy development and attracted private investment capital support to launch new companies that might not otherwise have been created.

For more on MCEC's work to support advanced energy innovation for Maryland businesses and families, I encourage you to read on!

Best regards,



GEOFF OXNAM | Founder & CEO, American Microgrid Solutions

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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.

Board of Directors



GEOFF OXNAM
Board Chairman
Founder & CEO
American Microgrid Solutions



MIKE GILL
Vice Chair of the Board
Portfolio Manager
Cornerstone Advisory



ANDREA PELLETIER
Treasurer of the Board
Senior Vice President of
Commercial Banking
Sandy Spring Bank



AL DELIA
Board Member
Vice President for Regional
Development and Engagement



DR. ALEX PAVLAK
Board Member
Chairman
Future Energy Initiative



BRITTNEY R. POWELL, ESQ.
Board Member
Attorney
Fox Rothschild LLP



JOHN QUINN
Board Member
Director of Energy Policy
Baltimore Gas & Electric Company



DR. SAMUEL I. WILLIAMS
Board Member
Professor of Government,
Business and Public Policy



DR. MARY BETH TUNG, ESQ.
Ex-Officio
Director
Maryland Energy Administration

Counsel

ROOP VIJAYAN
Assistant Attorney General,
Office of the Attorney General
Department of Commerce

W. DAVID RAWLE
Retired June 2021
Assistant Attorney General,
Office of the Attorney General
Department of Commerce

MCEC Administrative Team

The Maryland Clean Energy Center operates with five full time and three contractual staff, with supporting interns.



KATHERINE MAGRUDER
Executive Director



STEVEN M. COWAN
Chief Investment Officer



SABRINA L. BACHMAN
Communications Director



BENJAMIN J. RUPERT
Energy Project and Procurement Manager



PAMELA R. POWERS
Legislative Affairs & Administrative Manager



DOROTHY KOLB*
Controller



BRIAN TOLL*
Director - Maryland Energy Innovation Accelerator



BEN MARGOLIS*
Commercialization Program Manager - Maryland Energy Innovation Accelerator

WYATT A. SHIFLETT Director of Financing Programs
Thru November 2020

* Contractual Team Members

Interns

MONIQUE MANN | Comms & Marketing Intern
University of Maryland College Park, 2022

TÉA LORSCH | Policy Intern
University of Maryland College Park, 2022

JULIA KISCHKAT | Policy Intern
University of Maryland College Park, 2024



EXECUTIVE SUMMARY MCEC FY 2021

As a green bank entity working to build the clean energy economy in the State, during FY 2021 the Maryland Clean Energy Center focused resources and efforts in four areas:

- Coordinating outreach & education
- Mobilizing capital
- Providing technical and procurement support
- Facilitating innovation advancement

Despite the COVID pandemic, and quarantine beginning in March 2020, MCEC staff continued working remotely for the majority of FY 2021. During this time, MCEC made key staffing changes following the departure of the Director of Financing Programs in November 2020 to enhance its finance division.

MCEC's overall expenditures were \$1,258,043 and overall revenue was \$1,392,858 for FY 2021.

12.5 to 1 ROI Leverage

\$129 MM in private capital investment has been leveraged to deploy clean energy solutions resulting from \$10.38 MM in federal, state, and local dollars spent with the Center.

MCEC measured certain impact metrics to track progress towards its mission centric goals and return in investment in programs.

Engaging Stakeholders with Outreach & Educational Programs

Through timely outreach, MCEC acts to bridge consumers and contractors as well as academics, entrepreneurs, business leaders, and government. During FY 2021 MCEC continued to offer educational programming through the *Connecting to the Energy Economy Speaker Series*, which hosted 440 attendees during the live webinars. Virtual meetings and webinar programming for 2021 Maryland Policy Watch activities also allowed for stakeholder engagement.

In the past year, MCEC proactively reached out through surveys to industry representatives and local municipalities to assess priorities and plan for post-pandemic needs. Respondents to the Advanced Energy Market Assessment Survey, circulated in the spring, identified certain policy priorities along with specific needs for Consumer Outreach & Education, and Access to Capital as the top areas of concern for potential impact stability of the advanced energy sector in Maryland.

 **1** Local Policy

 **2** Consumer Outreach & Education

 **3** Access to Capital & Finance

 **4** Federal Policy

 **5** Workforce Availability

 **6** Supply Chain
(equipment & materials)

 **7** Support for Tech Commercialization and Start-ups

Priority areas of concern for potential impact to the stability of the advanced energy industry in Maryland identified by MCEC's 2021 Advanced Energy Market Assessment Survey.

With federal and state funding anticipated in the future to support implementation of energy resilience and sustainability project measures, MCEC also worked in partnership with the Maryland Environmental Service (MES) to gauge the interests and needs of local municipal jurisdictions seeking to implement energy projects to address resilience, renewable energy, and sustainability in the future.

Representatives for 23 jurisdictions responded to the 2021 Municipal Energy Resilience and Sustainability Project Development Survey, released this past spring. 96% of respondents indicated that their jurisdiction is interested in implementing energy projects for resilience and sustainability within the next two years, with key areas of interest identified as: Solar Power Generation, EV Infrastructure and Fleet Conversions, Building Health: Operations & Maintenance/ Energy Efficiency, Microgrids & Battery Back-up Systems for Critical Infrastructure, and Community Solar Access. The majority of respondents also indicated their jurisdictions are working with budgets of less than \$500 K for renewable energy and/or sustainability projects, and little to no dedicated staff support. MCEC will continue to work with MES to connect jurisdictions with the best resources and build awareness for existing statewide programs.

The Center is also expanding related procurement and technical assistance services currently offered.

Mobilizing Capital

MCEC brings investment capital at affordable rates to enable projects to move forward faster. Although MCEC Financing Programs faced setbacks due to the pandemic during FY 2021, metrics indicate related impacts were still achieved during this period.

The cumulative MCAP bond issuance through the period ending June 30, 2021, was \$33,015,456 for tax-exempt bonds and \$5,090,243 for taxable bonds. Also during FY 2021, almost \$43 MM in PACE transactions closed in the state.

MCEC is working in partnership with the Montgomery County Green Bank and Utility Service Providers to provide convenient access to affordable capital for residential consumers who wish to improve the energy efficiency of their homes in the state. At the close of FY 2021, the Maryland Public Service Commission gave approval for EmPOWER ratepayer surcharge funds to support the Clean Energy Advantage Loan Pilot Program. Funds will be used to support a loss reserve and interest rate subsidy for a period of approximately 30 months for an estimated 2,400 loans. The Clean Energy Credit Union has contracted to be the initial lending partner for this program offered statewide with a planned launch at the beginning of 2022. If the pilot successfully demonstrates consumer interest and impact, partners will seek its continuation in the future.

Providing Technical and Procurement Services

As a neutral third-party advisor, MCEC helps its partners enable outcomes and project success faster. In FY 2021, MCEC brought its technical and procurement capability to enable a novel Master Services Agreement with Morgan State University to help procure the professional services of a partnership vendor to develop a Master Energy Management and Sustainability Plan for the campus, and to execute certain energy and conservation improvements. Siemens was selected through a competitive process and has begun working on contract deliverables. MCEC is working to replicate the model with other potential partners.

Advancing Cleantech Innovation

As an economic development and job creation strategy, MCEC operates the Maryland Energy Innovation Accelerator (MEIA) to support tech to market commercialization of energy technologies emerging from universities and labs in the state. MEIA combines executive expertise with transferable cleantech seeking to become investible Maryland-based companies.

Throughout FY 2021, the program hosted eight start-up teams, secured a \$25,000 sponsorship for a company, and helped teams raise over \$1 MM in angel and crowd funding venture investment.

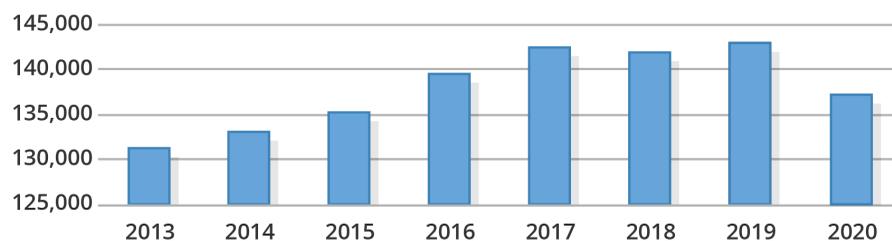
MEIA launched its first cohort in January 2020, and after a full year of cohort support, has received positive feedback.

Energy Sector Jobs & Wages as an Indicator Industry Health

Total sector employment has decreased in 2020, likely due to COVID. At the beginning of 2021, analysis by BW Research Partnership showed a loss of 429,000 jobs in 2020, representing a 12% decline from the pre-pandemic baseline. Although there was a slight growth rate of 0.6% in December 2020, this was the first time that a year closed with fewer workers in the clean energy sector, than when it began. www.e4thefuture.org/clean-energy-jobs-december-2020-analysis

The 2021 MCEC Comparison Report* shows that total sector employment for 2019 was 142,752 and decreased to 137,204 in 2020.

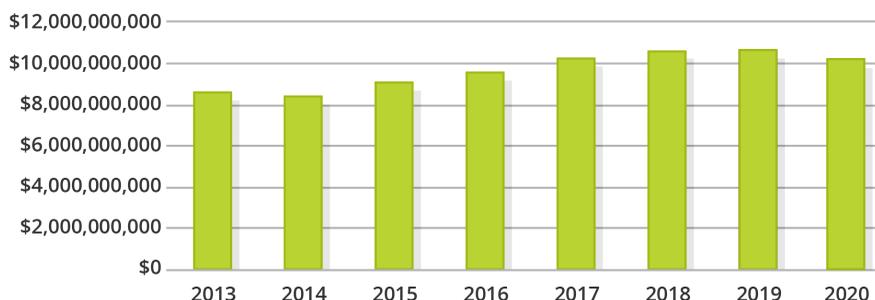
Total Sector Employment



*The 2021 MCEC Employment and Wages Report is derived from the most recently available (2nd quarter of 2020) Bureau of Labor Statistics' (BLS) Quarterly Census of Employment and Wages (QCEW). The source for the prior years' data came from the 2nd quarter of each year (2015 - 2020). Note: BLS data is typically not available for up to 6 months after it actually occurred.

The collective annual earnings of all workers in the clean energy sector decreased from \$10,704,862,604 in 2019 to \$10,260,660,352 in 2020.

Total Sector Annual Earnings



Looking to the Future

MCEC continues to successfully leverage approximately \$900 K per year in state funding to achieve outcomes with adoption of advanced clean energy, energy efficiency, and cleantech solutions along with related business growth in Maryland.

A five-year commitment of operating funds approved by the General Assembly, and signed into law by Governor Hogan in 2017, is scheduled to sunset at the end of FY 2022. This predictable funding has been critical in enabling MCEC to stabilize and advance during those years. Legislation passed during the 2021 session would have seen that support grow and continue beyond the sunset; however, Governor Hogan vetoed Senate Bill 460 & House Bill 419 “Economic Development – Advanced Clean Energy and Clean Energy Innovation Investments & Initiatives” in May 2021, which perpetuates funding uncertainty for long-term operation of the Center.

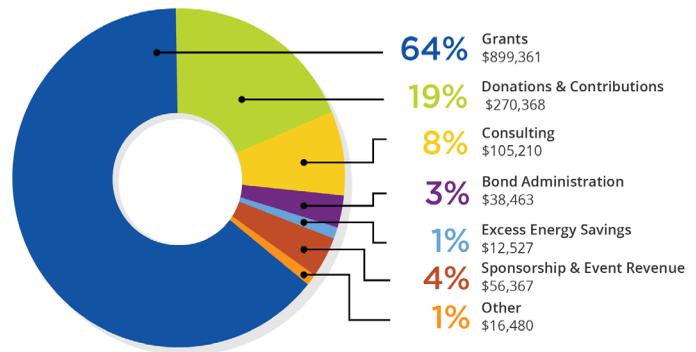
MCEC OPERATIONAL OVERVIEW

Funding Support and Budget

The Maryland Clean Energy Center budgeted for FY 2021 revenue of \$1,410,737, and expenses of \$1,288,237. Sources of revenue for MCEC in FY 2021 included: grants, excess energy savings revenue, project fees, sponsor and event revenue, bond administration revenue, and miscellaneous earned interest income.

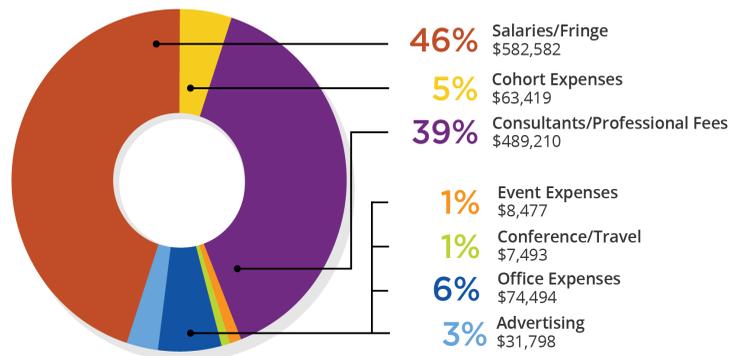
FY 2021 MCEC Revenue

In FY 2021, MCEC incurred a total of \$1,258,043 in operating expenses, with funds invested to support general administration, board activities, and operation of the Maryland Clean Energy Capital (MCAP) and Maryland Property Assessed Clean Energy (MD-PACE) programs, along with targeted education and outreach.



At the close of FY 2021, MCEC staff included five full-time positions, and contractual positions to support Maryland Energy Innovation Accelerator program administration, accounting and legal services.

FY 2021 MCEC Expenses



"FY 2021 Maryland Clean Energy Center Financial Statements June 30, 2021" can be found online at www.mdcleanenergy.org/about-mcec/enabling-statute/financial-statements.

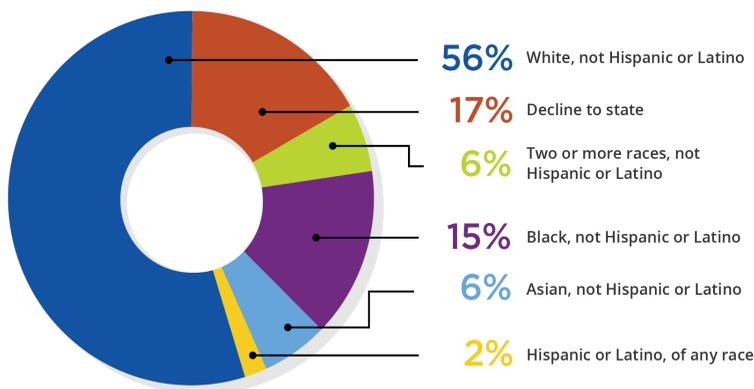


2021 ADVISORY COUNCIL

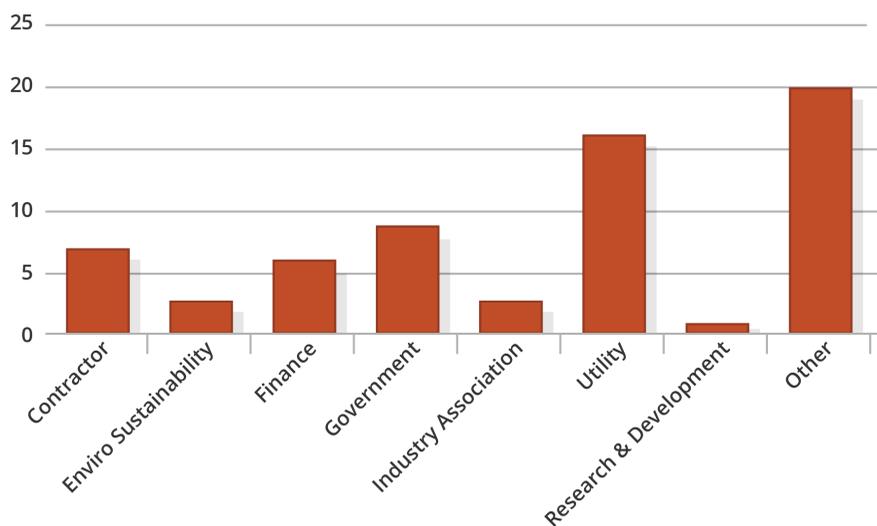
The Maryland Clean Energy Center is required by statute to appoint an Advisory Council to help develop a work plan for MCEC, set the framework for activity of the organization, advise the Executive Director, and inform the Board of Directors.

The Council evaluates issues, reviews proposed policy and regulatory matters, facilitates relationship building, and builds awareness of MCEC to encourage the adoption of its mission. In addition, the group identifies and works to remove barriers to success in the energy sector.

Council Member Diversity



Council Members' Company / Organization Type



2021 Advisory Council Members

Joseph Alfred

CEO - Ally Power Inc.

Brandon Bowser

CHP & Energy Resilience Program Manager - Maryland Energy Administration

Daniel Bresette

Executive Director - Environmental and Energy Study Institute

Kevin Brown

Senior Partner/Owner - Hobbs & Towne, Inc

Michael Bryant

President - Sabot Ventures LLC

Jonathan Carpenter

VP Industry and Government Affairs - DC Water

Jessa Coleman

Senior Manager of Programs - PACE Financial Servicing

Musa Collidge-Asad

Managing Partner, Board, Owner (and other roles) - BGB Investment Partners

Rob Corradi

Senior Advisor, Public Affairs - Sun Tribe Solar

Rudolph Dahl

President - Global Holding Companies

Keith Derrington

Founder/CEO - Derrington Energy LLC

Devon Dodson

Senior Advisor - Maryland Dept. of the Environment

Michael Eckhart

Clinical Professor - University of Maryland School of Public Policy

William Ellis

Regional Vice President of Government and External Affairs - Pepco

Henry Fawell

President - Campfire Communications

William Fields

Deputy People's Counsel - Office of People's Counsel

David Friend

Managing Partner - Laurel Renewable Partners, LLC

Josh Garrett

Director - Private Investment Team, Hannon Armstrong

Robert Gorsuch

Manager - School System Solutions LLC

Brendan Hartman

President - TranspareE Energy Services, LLC

Ron Herbst

Vice President - Brailsford & Dunlavey

Charles Hernick

Vice President of Policy and Advocacy - Citizens for Responsible Energy Solutions Forum

Jeffrey Hood

Chief Executive Officer - Hood Engineering and Consulting Services, LLC

Todd House

Manager, Economic Development - Washington Gas

Joanne Ivancic

Executive Director - Advanced Biofuels USA

James Johnson

IBBR Director of Facilities and Lab Services - University of Maryland Institute of Bioscience and Biotechnology Research (IBBR)

Len Jornlin

President & CEO - Optimize Renewables LLC

Elizabeth Kaiga

Key Account Director - DNV GL

Pari Kasotia

Board Member - CHESSA (Formerly MDV-SEIA)
Board Member - Neighborhood SUN

Travis Kavulla

Vice President, Regulatory Affairs - NRG Energy

Andrew Keys

Deputy Director - Northeast Maryland Waste Disposal Authority

George Kervitsky

President - KEE Consulting

Adam Landsman

President - PulseIQ

Troy LeMaile-Stovall

CEO - TEDCO

Kevin Lucas

Director of Rate Design - Solar Energy Industries Association

Arjun Makhijani

President - Institute for Energy and Environmental Research

Jim McDonnell

COO - Avalon Energy Services, LLC

Claudia Meer

Chief Investment Officer & CFO - AlphaStruxure

Michele Mitch-Peterson

Ingenuity Consultant - Siemens

Shannon Moore

Manager - Frederick County Office of Sustainability and Environmental Resources

Nandini Mouli

President - eSai LLC

Kwabena Osei-Sarpong

President and C.E.O - RIFE International, LLC

Chris Peoples

Managing Partner - Peoples Partners and Associates, LLC

Benjamin Roush

Principal - FSI Engineers

Cherise Seals

Senior Account Executive - NORESCO

Joe Seehusen

Director, Whole Home, Energy and Business Lending - Maryland Dept. of Housing and Community Development

Alison Shea

Vice President of Sales - Limbach

Grant Shmelzer

Executive Director - IEC Chesapeake

Thomas Simchak

Energy Consultant - Taucher International

Andre Slonopas

Principal Investigator - Army Futures Command

Brooke Smallwood

AVP, Program Management - Sparkfund

Barbara Tyrant

President - Women's Council on Energy and the Environment

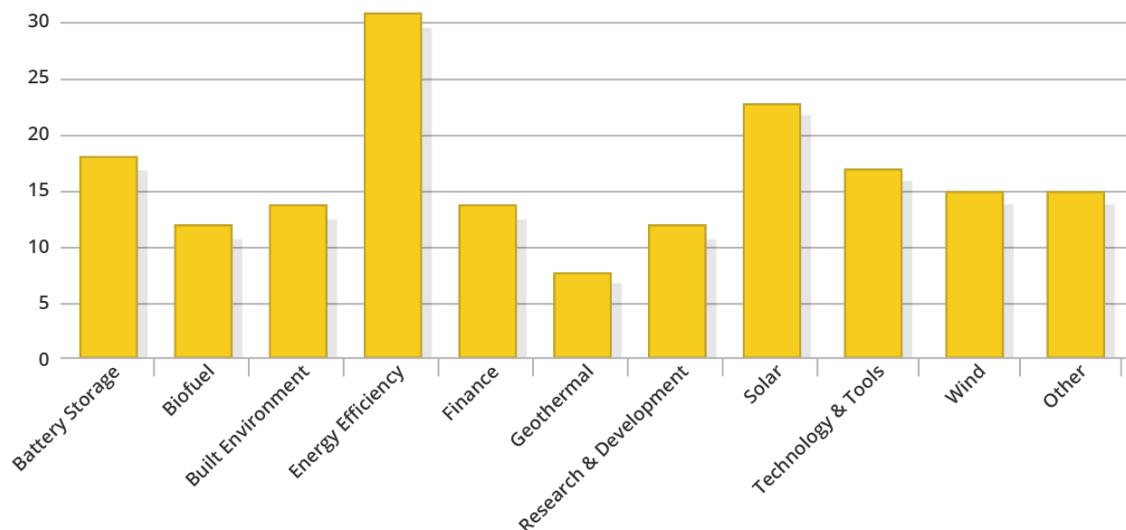
Eric Wachsman

Director - Maryland Energy Innovation Institute

Stu Widom

Manager, Regulatory & Legislative Affairs - PJM Interconnection, LLC

Council Members' Industry Sectors





FINANCE

Mobilizing Capital, Providing Procurement & Technical Support

MCEC works with both public and private project development partners to provide advantageous financing using its authority to issue tax-exempt and taxable bonds with the potential to own, operate, and lease assets. In FY 2021, the Center added fee for service technical and procurement support to its core competencies to expedite the evolution of energy projects from concept to completion.

Through FY 2021, MCEC has leveraged over \$129 MM in private capital to public dollars invested for energy project completion and deployment of clean energy measures.

MCEC currently operates the Maryland Clean Energy Capital (MCAP) and the MD-PACE Property Assessed Clean Energy Loan programs. These programs assist institutional, municipal, not-for-profit, industrial and commercial customer audiences. Efforts are underway to provide convenient and affordable financing for residential consumers with the launch of the Clean Energy Advantage Loan Program scheduled for Q2 of FY 2022.

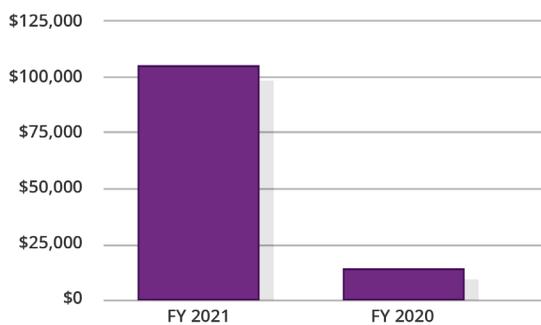
The overall goals of this operational silo of MCEC are to:

- Facilitate access to capital for clean energy project and business development
- Generate fee income for MCEC
- Enable job creation and achievement of climate goals

MCEC is working to achieve certain objectives through its financing programs and fee for service technical support, including:

- Establish MCEC as the go to independent resource for energy project development technical and financial assistance
- Generate sufficient fee revenue to offset costs of providing services
- Expedite vision to implementation pathway for projects to create jobs and achieve climate mitigation goals
- Add capacity to government operations in a cost-effective manner

MCEC Earned Revenue from Fees



MCEC earned \$105,210 in revenue from fees for consultative services as well as procurement and technical support in FY 2021.

MCEC provided consultative service to Baltimore City Public Schools (BCPS) and Morgan State University (MSU).

MCEC supports MSU's plans to develop and implement a comprehensive campus-wide Master Energy and Sustainability Plan. Early efforts involved the Center facilitating a highly competitive procurement process, designed to select one Energy Services Company to enter into a Master Services Agreement with MCEC to deliver cost-effective energy savings and generation solutions at the MSU campus. MCEC is assisting BCPS with the evaluation, development and management of clean energy projects located at various BCPS facilities. In 2021, the scope of assistance included collaborating with the District on the development of an Energy Performance Contracting (EPC) project, including the provision of independent review for the Investment Grade Audit of BCPS facilities on which the EPC is based.



Finance Program Impact Metrics

	FY 2021 TOTALS	CUMULATIVE TOTALS
		<i>As of August 2021</i>
Leveraged Investment (public to private \$\$)	\$100,600	\$129,000,000
Fee Income Generated		
Fee-for-Service	\$57,222	\$74,877
Financing	\$55,990	\$635,442
Project Finance Pipeline Projects	2	7
Project Finance Deals Closed	0	5
Project Management Pipeline Projects	1	2
Project Procurement, Technical Support & Management MOUs	2	0
Energy-related Outcomes of Projects		
kWh Saved	89M	89M
KWh Cost Savings	\$6,492,404	\$6,492,404
KWh Renewable Generation	29	29
KWh Storage Capacity	0	0
BTU Therms Saved	929,010	929,010
BTU Cost Savings	\$483,624	\$468,294
Therms Generated	0	0
Industry Job Hours (CEA, MD-PACE & MCAP)	2,312,608	2,312,608*
Climate Impact (greenhouse gas reduction, carbon capture)		
Greenhouse Gas Reduction (Tons-NOx, SOx & Methane)	0	0
CO ₂ Avoided (MT)	4,934	4,934
Water / Sewer Conservation (kGal)	151,838	151,838
Water / Sewer Conservation Cost Savings	\$866,858	\$866,858

**Number does not include Industry Job Hours for UMBC MCAP project.*

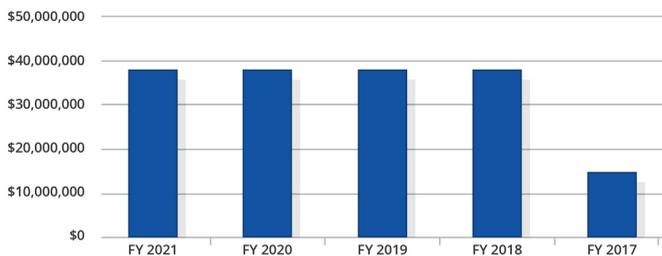
Therms Cost Savings estimated from Washington Gas Firm Commercial and Industrial Sales Service Rate Schedule No. 2 2020 & 2021.



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 statute 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.

Since MCEC's inception bond proceeds and additional sources of capital have been used to fund over \$40,000,000 in energy efficiency capital projects.

MCEC Cumulative Bond Issuance



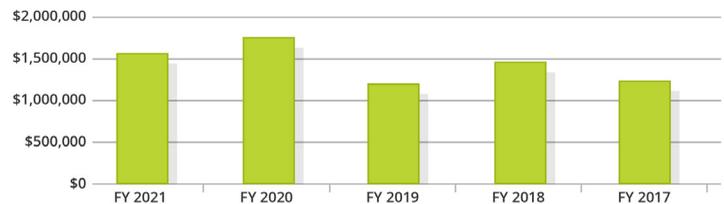
Cumulative MCAP bond issuance through the period ending June 30, 2021 was \$33,015,456 for tax-exempt bonds and \$5,090,243 for taxable bonds.

Proceeds from the seven bonds and notes 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 envelope renovations, water conservation measures, combined heat and power systems, demand response systems, construction management, capitalized interest, and cost of issuance.

Energy savings revenue collected by MCEC for the management of projects owned by the Center is the largest component of MCEC revenue.

Annual Energy Savings Revenue for FY 2021 totaled \$1,542,021.

Annual Energy Savings Revenue

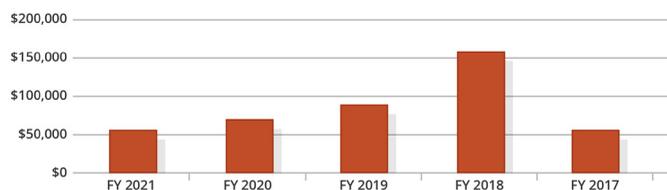


This non-operating income is used to service project debt and pay vendors for service delivered to projects.

Two large-scale energy efficiency projects, funded in part with proceeds from MCEC bond issuances and the energy savings performance of two projects that are several years into their respective post-construction performance periods, were still under construction during FY 2021.

MCEC earns administrative fees and performance payments from MCAP transactions. In FY 2021, those fees totaled \$55,990.

Additional MCAP Revenue





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.

During FY 2021, almost \$43 MM in PACE transactions closed in the state. The current project pipeline of transactions closed and projected to close in FY 2022 could exceed \$20 MM.

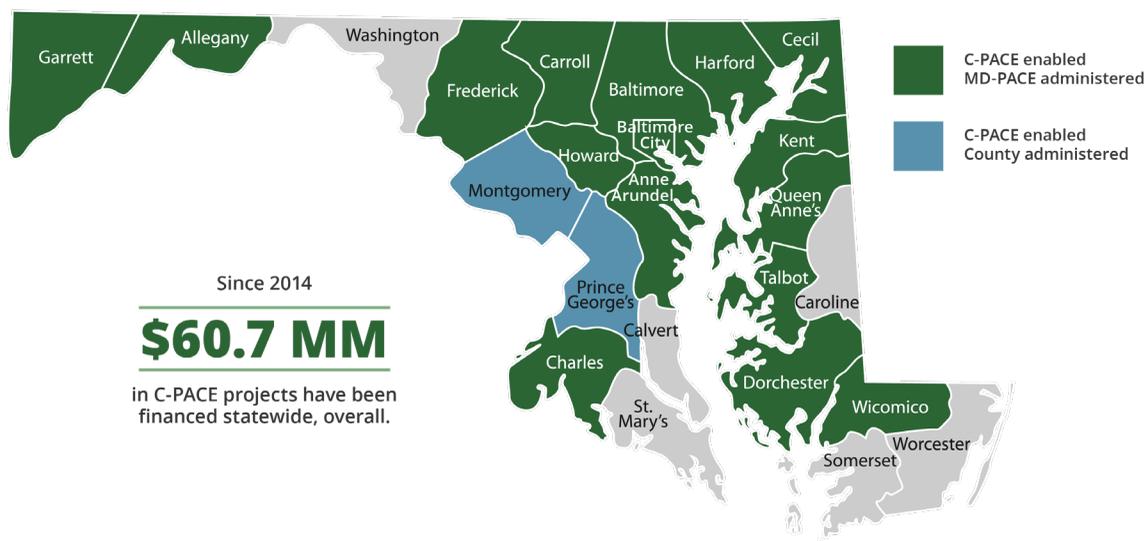
Throughout FY 2021, the MD-PACE program was administered through a partnership with Pace Financial Servicing, LLC (PFS). Eighteen major jurisdictions in Maryland passed enabling ordinances. Sixteen of those had program administration capability in place throughout FY 2021. Dorchester County enabled a MD-PACE ordinance during FY 2021. Montgomery and Prince George's Counties enabled C-PACE programs are self-administered performance contract financing.

In February 2021, the current MD-PACE program administrator, PFS, along with its sister company Greenworks Lending, were acquired by Nuveen and re-branded "Greenworks Lending by Nuveen." As part of Nuveen, PFS is limited in its ability to engage in contracts with local governments and is exiting its role in the MD-PACE program.

PACE Financial Servicing will continue to support MCEC through the end of 2021 to facilitate a smooth transition to a new vendor. MCEC will continue to administer the MD-PACE program with a new vendor in the future, following the contract award for a new MD-PACE Program Administrator during FY 2022.



View the latest MD-PACE Case Studies at www.mdcleanenergy.org/finance/md-pace.





MCEC partnered with the Virginia Department on Mines, Minerals and Energy (DMME) and the District of Columbia Department of Sustainable Energy & Environment over the grant term, which was originally three years, but extended to four with additional funds awarded.

As part of the strategy to maintain MAPA beyond the grant, the partners created a 501(c)3 organization with engagement from current members and the involvement of additional regional stakeholders. MCEC continues to provide administrative and marketing support, but progress on advancing the 501(c)3 has stalled due to staffing changes for key partners and limited resources.

The Mid-Atlantic PACE Alliance (MAPA) published six project case study videos as part of the deliverables to close the grant from the U.S. Department of Energy, which ended on December 31, 2020.

- [Brown's Arcade: MD-PACE Case Study for Historic Preservation & Adaptive Reuse](#)
- [Right Proper Brewing Company: DC-PACE Case Study for Energy Efficiency & On-Site Solar](#)
- [Frederick Indoor Sports Center: MD-PACE Case Study for 100% Solar Energy Offsets](#)
- [St. Paul's Lutheran Church: DC-PACE Case Study for Energy Efficiency Retrofits](#)
- [Microtel: MD-PACE Case Study for New Construction Project](#)
- [400 M Apartments: DC-PACE Case Study for Low Income Housing](#)

[View the latest MAPA Case Studies at www.pacealliance.org/case-studies.](http://www.pacealliance.org/case-studies)



FINANCING PROGRAM FOR ENERGY EFFICIENCY & RENEWABLES

In June of 2021, The Maryland Clean Energy Center (MCEC) and the Montgomery County Green Bank (MCGB) received approval from the Maryland Public Service Commission (PSC) to develop and implement a new residential financing program.

The Clean Energy Advantage (CEA) Pilot Program will facilitate access to lending capital provided by a third-party CEA Participating Lender allowing residential property owners anywhere in Maryland to conveniently and affordably complete energy improvements. The CEA program will be sponsored by seven utility partners who have been authorized by the PSC to fund the program using ratepayer surcharge funds of EmPOWER Maryland. Funds will be used to support a loss reserve and interest rate subsidy for a period of approximately 30 months for an estimated 2,400 loans. If the pilot successfully demonstrates consumer interest and impact partners will seek its continuation in the future. Program launch is anticipated in January of 2022.

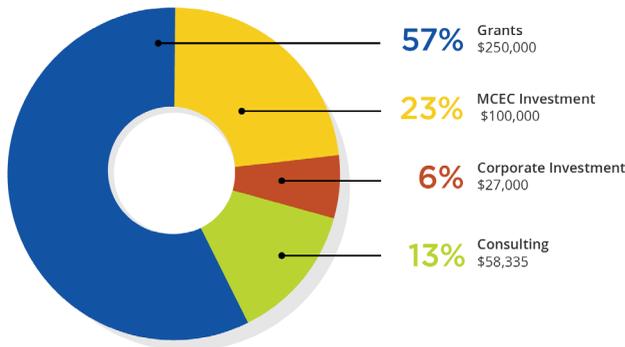
INNOVATION ADVANCEMENT Creating Cleantech Startups



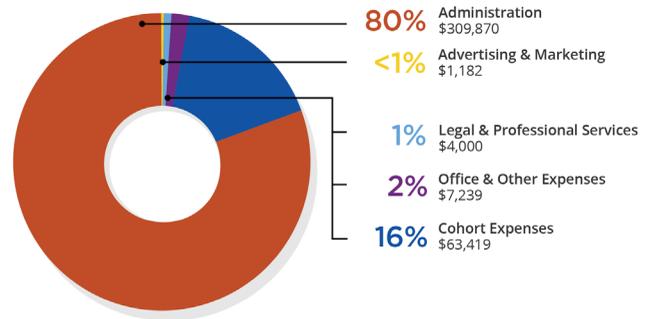
The Maryland Energy Innovation Accelerator (MEIA) is a venture development and advancement program offered by MCEC, focused on commercializing advanced energy and climate technologies developed at Maryland-based businesses, universities, and federal laboratories.

MEIA uniquely blends the “pull” of an early-stage venture development program with the “push” of accelerating existing pre-revenue businesses to create investible companies that will become the foundation of Maryland’s newest economic cluster. MEIA provides Startups with access to domain experts, strategic partners, professional services, and project management support to execute commercialization milestones.

FY 2021 MEIA Revenue



FY 2021 MEIA Expenses



Overall goals for MCEC Innovation Advancement efforts through MEIA include:

- Facilitate translation of cleantech discoveries to marketable products and services
- Promote business and job creation in the cleantech sector for Maryland
- Develop cleantech ecosystem in Maryland

MCEC and MEIA seek to achieve the following objectives:

- Identify promising technologies developed in Maryland
- Pull licensable technologies from Universities and Federal Labs into high quality Startups
- Accelerate commercial maturity of small Startups’ businesses
- Provide technical assistance with the development of commercialization plans
- Generate sponsorship and tech to market income to offset costs to operate MEIA above the State of Maryland contribution

Innovation Impact Metrics

	FY 2021 TOTALS	CUMULATIVE TOTALS
Cumulative Number of Companies Formed	0	1
Cumulative Number of Companies Served	22	27
Number of Jobs Created	8 Full-time 2 Part-time	8 Full-time 2 Part-time
Third Party Capital Investment	\$3.2 MM	\$3.2 MM
Grant and Sponsorship Revenue for Teams	\$656,000	\$656,000
MEIA Tech to Market Fee Income	\$65,000	\$90,000
MEIA Grant and Sponsorship Revenue	\$277,000	\$532,000

MCEC created the Maryland Energy Innovation Accelerator program and launched its first cohort in January 2020.

In its first 18 months, MEIA worked with (and continues to work with) 14 Startups that generated significant incremental economic development impact to the State of Maryland after enrolling in a MEIA program.

For more information about MEIA, visit www.mdeia.org.

MEIA now provides three programs that represent a three-tiered approach that moves technology from concept to demonstration:

1. **Pre-Accelerator** – A two-month customer-discovery program for the earliest technologies from universities and labs;
2. **Launchpad** – A six-month commercialization planning program for high-potential technologies in universities or labs; and
3. **Accelerator** – A six+ month program for established companies looking to fill senior roles, to demonstrate technology, and to obtain third-party capital investment.



FY 2021 Launchpad and Accelerator Teams

LEARN MORE ABOUT THE TEAMS AT WWW.MDEIA.ORG/PARTICIPATING-STARTUPS

TEAM NAME	TECHNOLOGY	ENTRY DATE	AFFILIATION	STATUS
Navita Tech	Vertical axis wind turbine	Fall 2020	UMBC	Graduated
Manta Biofuels	Algae conversion to biofuels	Fall 2020	UMCES	Graduated
High-T-Tech - Catalyst	New catalyst manufacturing	Fall 2020	UMD	Graduated
HighT-Tech - Membranes	Method for sintering membranes for solid-state batteries	Spring 2021	UMD	Launchpad participant
Plastics Upcycling	Efficient method to recycle #3-7 plastics	Spring 2021	JHU	Launchpad participant
InventWood	Convert wood lumber to steel replacement	Spring 2021	UMD	Accelerator participant
ATP-MD, LLC	Biomass-to-value technology	Summer 2021	None	Accelerator participant
Dynami Battery	Battery separator technology	Summer 2021	None	Accelerator participant
Rechargeable Zinc Battery	Rechargeable zinc battery for wearable device applications	Summer 2021	UMBC	Launchpad participant

To form or augment Startup Teams, MEIA recruits and engages experienced, industry-specific business executives and entrepreneurs (“energy executives”) who want to become founders or executives of the Startup to perform its commercialization activities.

This energy executive model creates higher quality leadership teams that, when combined with great technology, produce the investible Maryland-based companies that form the foundation of an emerging economic cluster.

MEIA is managed by Director Brian Toll with support from Commercialization Program Manager Ben Margolis. In FY 2021, MEIA was also supported by MBA-intern Margaret Service and undergraduate intern Cynthia Ting who provided excellent research deliverables and supported MEIA’s social media presence.

Multiple organizations provide financial and/or in-kind support to MEIA and its participating Startups.





OUTREACH & EDUCATION

Building the Marketplace

The Maryland Clean Energy Center continues its investment in outreach and education activities with efforts to build the advanced energy economy in Maryland.

MCEC convenes stakeholders and industry leaders, reports on policy activity that impacts the sector, and offers leadership perspective through participation in industry-related activities and engagement.

MCEC Outreach and Education goals, include:

- *Establish MCEC as a clearinghouse of information between industry, academia, government, and consumers*
- *Provide information about clean energy technologies, products, and services to a broad consumer audience to encourage adoption*
- *Be a resource and provide programming to facilitate industry networking, professional education, and partnerships*

With these goals in mind MCEC strives to achieve the following related objectives:

- *Help customers and business partners connect*
- *Prioritize industry networking and professional education opportunities; with focus on multifamily, C&I, not-for-profit, and academic institution project development.*
- *Educate Stakeholders and support industry capacity to engage in policy process*

In response to continued changes in the local, national, and global economy, and the impacts to business operations and social interactions due to COVID-19, the 2020 Maryland Clean Energy Summit was canceled.

MCEC also explored new ways to engage with stakeholders and assess market needs and trends, while adapting to changing limitations for in-person convenings. MCEC made a quick transition from hosting an in-person annual summit to offering online education. The Connecting to the Energy Economy Speaker Series provided an opportunity for the Center to reach a broader geographic audience and allowed for international experts to speak on panels.

Enhanced digital offerings also supported Policy Watch activities in FY 2021.

MCEC measures the impact of its outreach and education activity in event attendance, social media engagement, revenue from program sponsorship, and website hits.

FY 2021 Outreach & Education Impact Metrics

 **Event Attendance Counts**

611

 **Social Media Activity**
*(Facebook impressions/
Twitter engagement)*

104,451

 **Sponsorship & Registration Fees Raised**

\$56,000

 **Website Hits**

24,513

 **Email Engagement**
SUBSCRIBERS

2,186

 **Email Engagement**
RELEASES

61

Event attendance counts reflect individuals who participated in the combined events and webinars hosted by MCEC in FY 2021. Email engagement releases reflect MCEC Newsletters, special announcements, and Policy Watch updates sent to subscriber lists, in addition to press releases distributed to media contacts.

Market Analysis

MCEC conducted an Advanced Energy Market Assessment Survey in the spring of 2021 in order to assess the needs of the energy industry and better understand what resources, investments, policies, and partnerships the instrumentality may work to provide in the coming years.

Top Maryland Policy & Regulatory Topics of Interest



Energy Innovation & Commercialization



Renewable Portfolio Standard (RPS)



Grants & Incentives



Resilience in the Energy Equation

The summary report of compiled survey results was shared with MCEC's Advisory Council ahead of their annual meeting to guide workgroup discussions and prioritize focus areas for the Center's efforts.

Key Themes & Recommendations Included:

- Continued needs for professional education and networking opportunities
- Hybrid event format options for the transition to return to in-person meetings and programs
- Developing searchable online tools (workforce sourcing, RFP/bid opportunities, resources, etc.)
- Provide education for stakeholders and support industry capacity to engage in policy process
- Needs for green bank Leveraging Fund, similar to the model in Connecticut
- More resources needed for pre-project development technical support and financing
- Greater market education on PACE financing opportunities, with focus on project eligibility expansion for resiliency measures
- Develop framework for analyzing optimal capital structures by project type
- Opportunities for MCEC to support end-users as a neutral third-party procurement advisor, including the development of standardized procurement templates to expedite the project development process
- Support for large mechanical contractors get to become utility approved contractors
- Permitting & site selection barriers to success for technology deployment
- Increased investments to move tech from development to adoption: University and Startups are struggling to maintain patents due to lack of funds (University), and lack of unrestricted funds (Startups)

View the Advanced Energy Market Assessment 2021 Summary Report at www.mdcleanenergy.org/wp-content/uploads/2021/05/MCEC-Advanced-Energy-Market-Assessment-Summary-Report-05.2021.pdf.

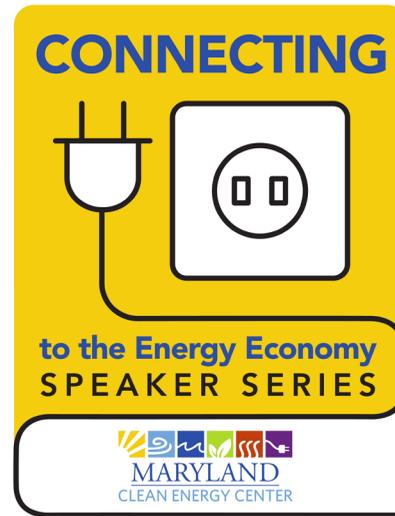
Successful 2020 Speaker Series

MCEC hosted a ten-part webinar series from September 3 through November 5, 2020. The *Connecting to the Energy Economy Speaker Series* webinars were designed to connect speakers and stakeholders, with a focus on current events in the evolving energy economy.

The vast majority of series participants were from Maryland, and 440 individuals attended live programs, representing 21 states, Washington, D.C., and 15 different countries.

Session recordings are available online for continued viewing at

www.mdcleanenergy.org/speakerseries.



Series Sponsors



2021 MCEC Speaker Series Webinar Participant Summary

PROGRAM	SESSION ATTENDEES	RECORDING VIEWS
01 - State of the Sector: Impacts of COVID	61	189
02 - Access to Capital	55	41
03 - Energy as a Service	64	96
04 - Energy Storage & Grid Modernization	75	89
05 - MOPR & FERC Order	106	165
06 - Solar Siting	102	71
07 - Building Health	30	53
08 - Resilience	52	60
09 - Energy Innovation for Economic Development	54	59
10 - Nuclear Energy	98	156

Recording Views as of 02/23/2021

Number of Unique Program Attendees | **440**

2021 Maryland Policy Watch

MCEC staff tracked 105 pieces of legislation pertaining to Clean Energy during the 442nd Legislative Session of the Maryland General Assembly.

In summary, 44 bills relating to the Clean Energy Sector were returned passed. At the same time, 61 failed through withdrawal by the sponsor, receiving an unfavorable report, or failing to make it out of committee and cross over. Of the 44 bills tracked that passed, 7 passed the last day of the session.

Climate Crisis and Vehicle Electrification legislation accounted for the majority of energy-related bills introduced. Other legislation this session focused on:

- Environmental Justice and Climate Change
- Economic Development/Innovation Advancement
- Proposed RPS Alterations
- Vehicle Electrification and Incentives
- Utility Regulation
- Resilience

Several bills introduced also addressed under-served communities and access to energy assistance for low to moderate-income families. Additional legislation passed to enhance economic development, advanced clean energy innovation, and access to funding for remediation and resiliency programs.

Policy Watch Summaries and Materials are available at www.mdcleanenergy.org/policywatch2021.



As in prior years, MCEC Staff distributed weekly Policy Watch reports with hearing alerts shared through social media. Stakeholders joined the MCEC legislative committee on weekly virtual meetings to share information and the status of pending legislation.

As an alternative to the traditional in-person Legislative Reception event, MCEC hosted six virtual discussion sessions from January to April, 2021, as part of its Policy Watch activities.

127 individuals participated in one or more of these webinar programs, designed to assist engaged stakeholders to better navigate through a legislative session facing continued challenges for health and safety, and economic revitalization.

2021 Policy Watch Webinar Series Attendee Summary

PROGRAM	SESSION ATTENDEES
01 - Climate Action Strategies & Environmental Priorities	43
02 - Leveraging Investment & Advancing Clean Energy Innovation	52
03 - Response Strategies for the Minimum Offer Price Rule	47
04 - Transportation Electrification	47
05 - Energy Efficiency for Equity & Inclusion	42
06 - Session Wrap-up Report for Clean Energy Sector Status Updates	58

Number of Unique Program Attendees | **127**

BIOMASS ENERGY INITIATIVE State Wood Energy Team Grant Award Overview

In June of 2021, the Maryland Department of Natural Resources (DNR) Maryland Forest Service was awarded \$249,869 for a Wood Innovations Grant from the U.S. Department of Agriculture (USDA) to develop priority projects with the Maryland Wood Energy Team.

This partnership effort between the Maryland Clean Energy Center, Maryland Department of Commerce, University of Maryland Extension, the USDA Forest Service, and others aims to develop wood energy facilities that will produce new jobs and develop renewable energy markets for underutilized forest products, which will in turn benefit the health of Maryland's sustainable forests.

Under this grant, MCEC will oversee the hiring and supervision of a woody biomass energy specialist who will identify wood energy opportunities throughout the state. MCEC will also contract with ACDS, LLC or other highly qualified contractor to assist the Wood Energy Team with technical support, economic impact analyses, and generating at least four topic reports identified by the Team.



View the Full Grant Award Announcement at www.news.maryland.gov/dnr/2021/06/03/maryland-receives-funding-to-develop-wood-energy-projects.



FY 2022 PROJECTIONS FOR MCEC

Maryland is currently recognized for strong policies and incentives to support the adoption of solar and wind energy generation. MCEC anticipates the evolving clean energy economy in the state will require more deliberate focus on transportation electrification, adoption of energy storage, and ensuring grid resilience will be prevalent in the fiscal year ahead.

Overall, MCEC plans to continue the build-out green bank capabilities to increase investment in the future through innovation, infrastructure, and partnerships in FY 2022. The Center will also continue to play its role as a unique funding authority and engage in building broader relationships with industry stakeholders.

In FY 2022 MCEC will:

Continue its pursuit to establish predictable and stable future funding

Support innovation advancement activity with continued growth for MEIA

Lead efforts to provide access to capital for deployment of market-ready clean energy technologies statewide

Expand outreach, education, and stakeholder engagement initiatives

A digital version of the FY 2021 Maryland Clean Energy Center Annual Report is available for download at www.mdcleanenergy.org/about-mcec/enabling-statute/annual-reports.



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