



# FY'17 Annual Report

October 2017

**Maryland Clean Energy Center 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. The 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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## Message from the Chairman



Ladies & Gentlemen:

Maryland's Clean Energy economy is growing and these are exciting times for the Maryland Clean Energy Center. Clean Energy employs nearly 150,000 Marylanders. Maryland added more than 7,000 Clean Energy jobs and the average wages for those jobs is increasing. Maryland's universities are international leaders in Clean Energy research and we are home to some of the most innovative Clean Energy companies. Since our launch in 2008, the Maryland Clean Energy Center has played a key role in this process, developing innovative financial tools, building relationships, and facilitating dialogue.

Over the past year, MCEC reached an exciting new milestone toward our mission. Through the hard work of a legislative task force, MCEC staff, the Maryland Energy Administration and other state agencies, we redefined our role, forged new relationships and secured the resources necessary to continue our mission. In May, Governor Hogan signed Senate Bill 313 into law strengthening MCEC's ability to fulfil our mission. The legislation forges a partnership with the University of Maryland through the newly created Maryland Energy Innovation Institute and provides dedicated operating support for the next 5 years. Together, MCEC and the MEII will explore new opportunities not simply to advance technology, but also to innovate how we finance and deploy it.

As an instrumentality of the State of Maryland, MCEC has unique abilities to support Clean Energy projects by facilitating low-cost, innovative finance. Over the past year, MCEC used that ability to launch a \$20 million energy efficiency upgrade at one of our universities, facilitate access to Property Assessed Clean Energy (PACE) financing, improve access to Qualified Clean Energy Bonds (QCEB), and serve as advisors to others.

The coming year promises to be an exciting one for MCEC. Our new role and partnership with MEII creates new opportunities to support Clean Energy projects, particularly through innovative finance. We look forward to tackling the new challenges, expanding the number of projects we serve, and promoting Clean Energy innovation and job growth.

As the Clean Energy economy continues to flourish, we look forward to unlocking the power of your ideas, innovation and inspiration.

Sincerely,

A handwritten signature in blue ink that reads "Geoff Oxnam". The signature is fluid and cursive.

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



## MCEC Board of Directors FY 2017

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Geoff Oxnam  
Founder & CEO  
American Microgrid Solutions

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Center  
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Director  
Maryland Energy Administration



The University of Maryland entry into a competition sponsored by the U.S Department of Energy that challenges collegiate teams from around the world to design and build energy-efficient, solar powered houses took second place overall and was the first place design from the United States. Designed by an interdisciplinary team of students, the prototype house beat 10 teams from around the globe. UMD's entry resilient Adaptive Climate Technology (react), seeks to improve sustainability in four ways and includes a hydroponic garden and "living walls" within its courtyard. Go TERPs!

## Overview

The original mission scope for MCEC was quite broad and focused on growing what was then a nascent clean energy industry sector that had not been prevalent in the state prior to that time. The related directives from the original 2008 enabling stature are:

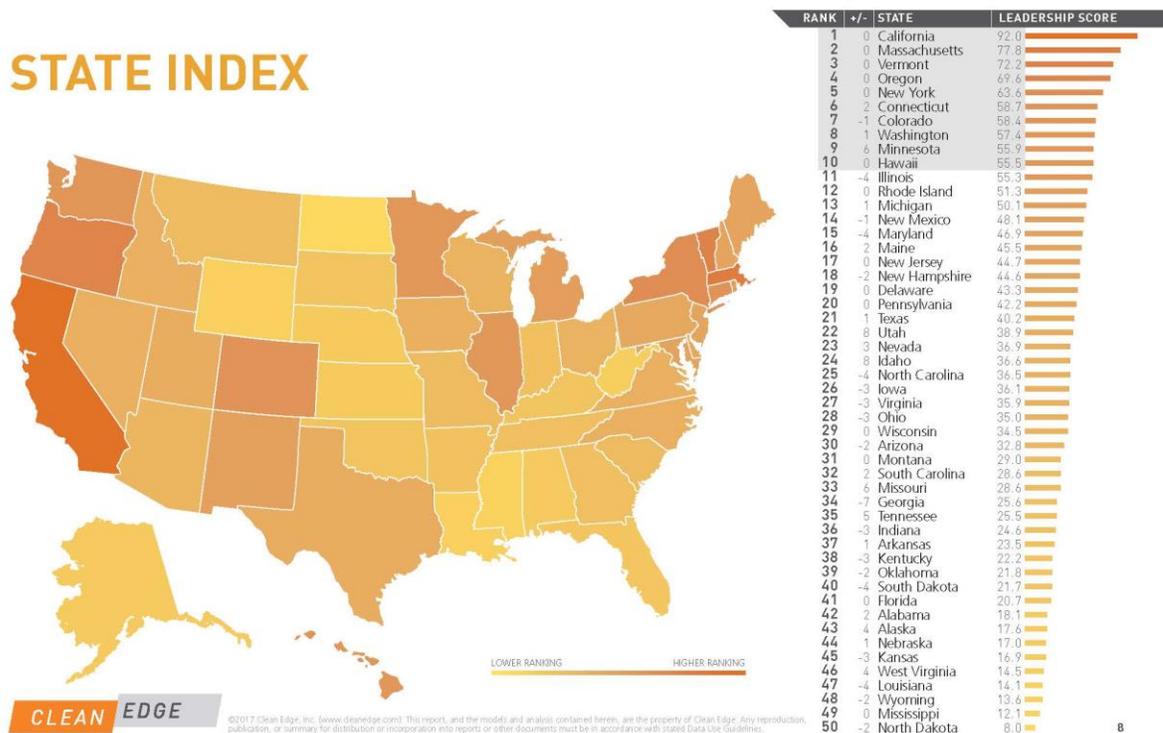
- **Promote Economic Development and Jobs in the Clean Energy Industry Sector**
- **Promote the Deployment of Clean Energy Technology**
- **Serve as an Incubator for the Development of Clean Energy Industry**
- **Collect, Analyze and Disseminate Industry Data**
- **Provide Outreach & Technical Support to Further the CE Industry**

Over the years, the MCEC work plan focused on helping consumers, supporting businesses, and informing policy makers. Projects and programs involved:

- Increasing access to capital for investment in the sector
- Initiating outreach and education to increase adoption of renewable energy technologies and energy efficiency practices
- Fostering effective business relationships and providing technical support for commercialization of energy related research & development
- Advancing public policy to insure a conducive environment for industry success

## Success Indicators

Clean Tech Leadership Index reports Maryland retained a position in the top 20 states overall in the **STATE INDEX** which categorizes scores for all 50 states, derived from more than 80 state-based indicators.



The ranking dropped from the previous year position in this category of 11<sup>th</sup> overall. Maryland rose from the 2016 positions, in ranking categories for policy from 8<sup>th</sup> to 9<sup>th</sup>; and for technology advancement from 12<sup>th</sup> to 15<sup>th</sup>. In regard to capital investment measured in the report, Maryland lost ground in 2017, dropping from the rank of 23<sup>rd</sup> in 2016 to 35<sup>th</sup> in the nation.

### Job Growth Evident

In FY 2017 MCEC collected employment related data to evaluate whether or not jobs and wages in the energy sector were growing. The 2016 MCEC Employment and Wages Report is derived from the most recently available Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW).

The QCEW data is based on the use of the North American Industry Classification System; or NAICS codes which are the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. The analysis shows employment in the clean energy sector makes up 7% of the overall Maryland workforce.

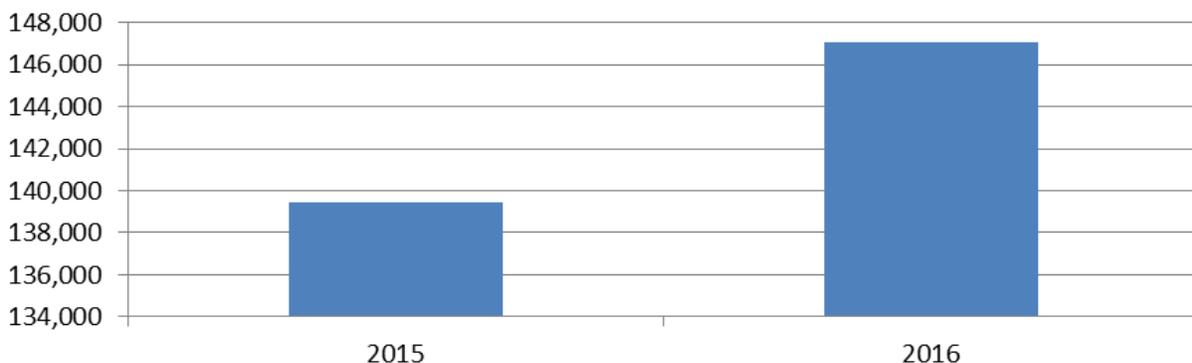
### Total Reported Maryland Workforce June 2016



MCEC compared data from Q2 2013 to Q2 2015 and the Comparison Report shows an **increase in the total number of reporting establishments (employers) of over 202 employers as compared to the 2015 QCEW report.** See *Appendix A: Maryland Energy Employment Data Analysis*

The report also identified **an increase in the total employment numbers of 7,599 (June 2015 vs. June 2016).** Of all 6 digit employment reported in June 2016, the clean energy sector reported **147,028 total workers** out of 2,094,832 total workers for the State of Maryland, representing essentially 7% of the overall Maryland Workforce.

### Total Sector Employment



Equally important are the increases in wages reported for the period with the **sector-wide average weekly earnings increased from \$1,394 to \$1,466**. The **collective estimated annual earnings of all workers in the clean energy sector increased from approximately \$9.4M in 2015 to \$10.4 in 2016**.

Data from a report recently issued by the US Department of Energy capturing Maryland Energy & Employment and based on the technologies DOE identifies as relevant in the sector, shows a total of approximately 122,500 jobs in the Energy Sector in Maryland. Approximately 67,061 of those jobs are linked directly to the energy efficiency sector in the state.

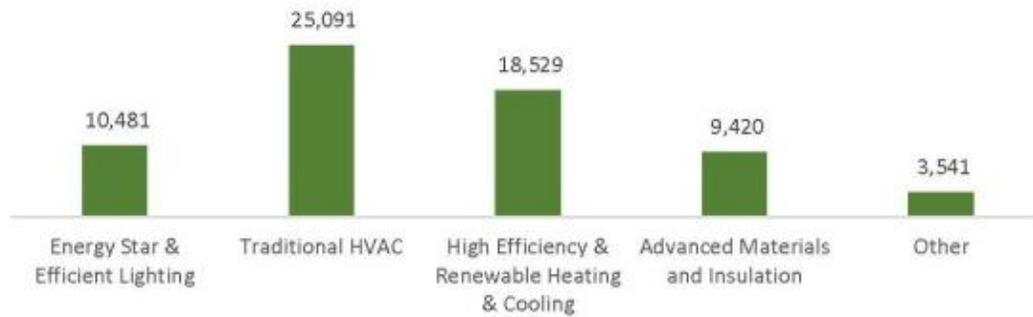
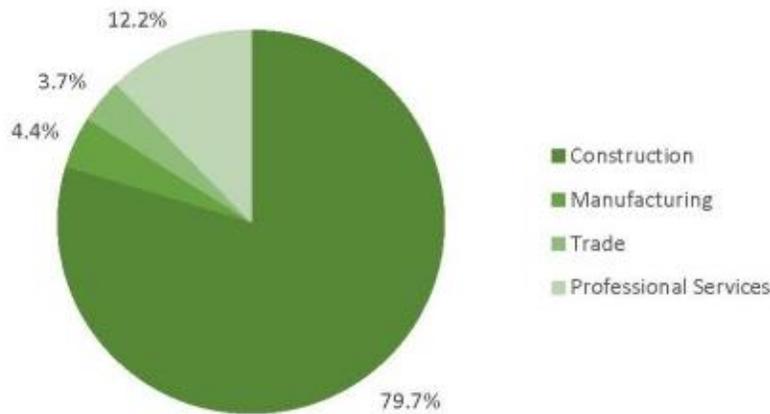


Figure 9. Energy Efficiency Employment by Industry Sectors



### Responding to General Assembly Mandates in FY 2017

Following two years of mandated study on the potential for Maryland to build green bank capability, executed by MCEC, the General Assembly passed SB 726 **“Maryland Clean Energy Task Force”**. This legislation required MCEC to undergo analysis by the Department of Legislative Services, ultimately intended to “determine how best to make MCEC self-sustaining without deviating from its mission and charge”. During FY 2017, from spring 2016 through December 2017, much of MCEC staff time and energy were devoted to responding to this mandate. The language of the bill can be viewed at: <http://mgaleg.maryland.gov/webmga/frmMain.aspx?id=sb0726&stab=01&pid=billpage&tab=subject3&ys=2016rs>

As an outcome of the work undertaken by the aforementioned task force, in January 2017, legislation as part of a package of Governor Hogan’s environmental initiatives was introduced which would serve to set a course for the future path of MCEC.

**SB 313- “AN ACT concerning Economic Development – Maryland Energy Innovation Institute”**; passed by the General Assembly was signed into law by Governor Hogan in May of 2017. SB313 serves to align the mission of MCEC with the purposes of the Maryland Energy Innovation Institute (MEI2), an entity affiliated with the University of Maryland College Park.



The complete statute can be viewed on line at:

<http://mgaleg.maryland.gov/webmga/frmMain.aspx?id=sb0313&stab=01&pid=billpage&tab=subject3&ys=2017RS>

Informed by this new statutory language the mission of MCEC remains very similar in scope, but has been modified to the following:

The purposes of the Center are to:

- 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

Additionally, the statute states that the Center, “May disseminate information and materials pertinent to clean energy technology, education, 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

From FY 2009 to FY 2011, MCEC used start up grant funding in general to:

- Establish its presence in the state
- Convene industry partners to assess opportunities and address needs
- Engage and inform stakeholders on related policy and regulation discussion and development
- Facilitate workforce training
- Implement efforts to support innovation and entrepreneurs working in the space

From FY 2011 to FY 2016 MCEC was more proactively engaged in efforts to leverage private investment and facilitate access to capital for clean energy deployment. Recognizing that access to public capital to support administration would continue to be uncertain the board strategized how it could use statute enabled capabilities to generate revenue. The following programs were launched during this time period:

- Maryland Home Energy Loan Program (MHELP)
- Maryland Clean Energy Capital (MCAP)
- MD PACE (Property Assessed Clean Energy Lending)
- Maryland SAVES (Facilitates Access to Qualified Energy Conservation Bonds )

## Funding Support & Sustainability

At the time MCEC was created, the instrumentality was not assigned a dedicated or sustainable source of revenue to support administration and had been awarded limited funding to implement specific programs. Throughout FY 2017 funding support to maintain operations was in doubt and limited. During that time, while the center was under Task force review, operational costs were minimized and staff was cut to eliminate the communications functions previously covered. The MCEC Board opted not to host the Maryland Clean Energy Summit in calendar year 2016 and again in 2017.

Heretofore, neither language in the MCEC enabling statute or an expressed directive of the board required the Center to be self-sustaining and focus efforts primarily on revenue generation to support its existence. Included with the passage of SB 313 was the commitment of \$7.5MM in funding to support MCEC and stand up the MEI2 which would be available beginning in FY'18. Previous loans made by MEA to MCEC for operating support were forgiven with this Act, which clears the way for MCEC to cease operating as a going concern by auditors.

The following language, included in the recently adopted oversight statute, constitutes a significant change in this posture for the instrumentality to have a greater focus on generating revenue for its sustainability in the future:

“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”

**With the launch of the Maryland Energy Innovation Institute in August of 2017, and the promise of a multi-year funding commitment, MCEC is advantageously positioned to build upon a much more stable foundation for future success.**



**Left:** Celebrating the launch of the Maryland Energy Innovation Institute L to R: Dr. Wallace Loh, Congressman Chris Van Hollen, Delegate Tawanna Gaines, Senator Rich Madeleno, Dean Darrell Pines, Dr. Eric Wachsman and Dr. Mary Beth Tung.  
**Right:** MEI2 & UM Energy Research Center Director Dr. Eric Wachsman addresses the audience at the event.

## Maryland Energy Innovation Institute Launch



**Left:** Members of the MEI2 Advisory Board. **Upper Right:** Congressman Chris Van Hollen greets the launch event audience. **Lower Right:** Board member Michele Mitch Peterson listens to the speakers.



## Advancing Finance Programs

Throughout FY 2017, MCEC maintained efforts to provide access to financing solutions enabling implementation of energy improvements and project development for cost saving and reliability of service desired by consumers. The most significant developments in MCEC financing programs that occurred in FY 2017 are summarized below.

### MHELP Ended

After six years of successfully facilitating the availability of capital for residential property owners to finance energy improvements, the Maryland Home Energy Loan Program (MHELP) folded on August 1, 2017, due to lack of continued funding for underwriting and program administration. Through this program, funded by an ARRA grant, MCEC leveraged over \$30M in private capital which allowed 4075 property owners to make energy improvements and provided approximately 67,000 contractor employment hours for the related workforce.

### MD PACE Program Expansion & Mid- Atlantic PACE Alliance Grant Recipient

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**. At the time of this report, 13 of the major jurisdictions have passed enabling ordinances, and 11 had program administration capability in place. Almost \$6M in project financing has been recorded.

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 US 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.

## MCAP Opportunities

MCEC works with both public and private project development partners to investigate how projects could be advantageously financed using its authority to issue tax-exempt and taxable bonds as well as own, operate and lease assets. During FY 2017, MCEC began working on various transactions that are projected to close in FY 2018.

## MarylandSAVES

The State of Maryland and several highly populated jurisdictions were awarded allocations of Qualified Clean Energy Bonds (QECBs) through a federal government program that provides a direct pay subsidy from the US Treasury to offset interest cost on qualifying projects. These debt instruments were designed to provide low cost capital for energy projects. Maryland initially received \$58.4 MM in allocations with approximately \$42MM remaining in unused allocations held at the local government level.

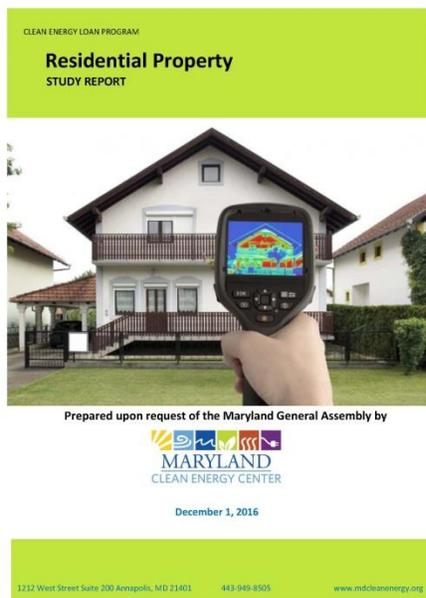
Working with program partners from Clean Source Capital during FY 2017, MCEC was engaged in outreach efforts to encourage the use of available QECBs for project financing. MCEC and Clean Source provided information and technical support to several project developers, as well as local jurisdictions in efforts to advance projects. To date, the only jurisdictions to issue QECBs has been Montgomery County and the State of Maryland. Baltimore City has passed a resolution to identify a QECB project and name MCEC as the issuer under the MarylandSaves program.

## Executed Residential PACE Study

**HB 387-“Clean Energy Loan Program - Residential Property – Study”; passed and signed by the Governor during the 2016 session; required the Maryland Clean Energy Center to conduct a study to determine design and implementation strategies for a residential clean energy loan program.**

A link to view the language of the final bill passed is below:

<http://mgaleg.maryland.gov/webmga/frmMain.aspx?pid=HB0387&stab=01&pid=billpage&tab=subject3&ys=2016rs>



The bill specified the study should include consideration of whether strategies will work advantageously with loans made by private lenders for residential energy efficiency and renewable energy projects; called for certain stakeholder participation; and directed MCEC to report its findings and recommendations to the General Assembly on or before October 1, 2016. The study was completed and submitted, working with a group of key stakeholders, as per the statute and other identified by MCEC.

A downloadable PDF of the final “Clean Energy Loan Program Residential Property Study Report” can be found online at:

[http://mdcleanenergy.org/sites/default/files/Clean%20Energy%20Loan%20Program\\_%20Residential%20Property%20Study.pdf](http://mdcleanenergy.org/sites/default/files/Clean%20Energy%20Loan%20Program_%20Residential%20Property%20Study.pdf)

### **Baltimore Shines Light on Solar Energy for Low to Moderate Income City Residents**

During FY’17, MCEC participated in an MOU with the City of Baltimore and the US Department of Energy in efforts to facilitate access to solar energy solutions for low to moderate income ratepayers, along with related workforce development. Led by Congressman John Sarbanes, this initiative was dubbed “Baltimore Shines” by Mayor Catherine Pugh. In FY’17 the partnership was awarded grant funds from the Abell Foundation, as well as a DOE “Solar In Your Community” Grant, to continue the work begun in the previous fiscal year.

In support of the initiative, MCEC staff participated on a panel with other local leaders presenting at the Whitehouse Clean Energy Savings for All Americans Summit, held at Morgan State University in November 2016.



Congressman John P. Sarbanes spoke at the MCEC 2017 Legislative Day program.

MCEC continues to maintain efforts to facilitate access to capital to fund implementation of the desired outcomes with this partnership.

### **Stakeholder Outreach & Engagement**

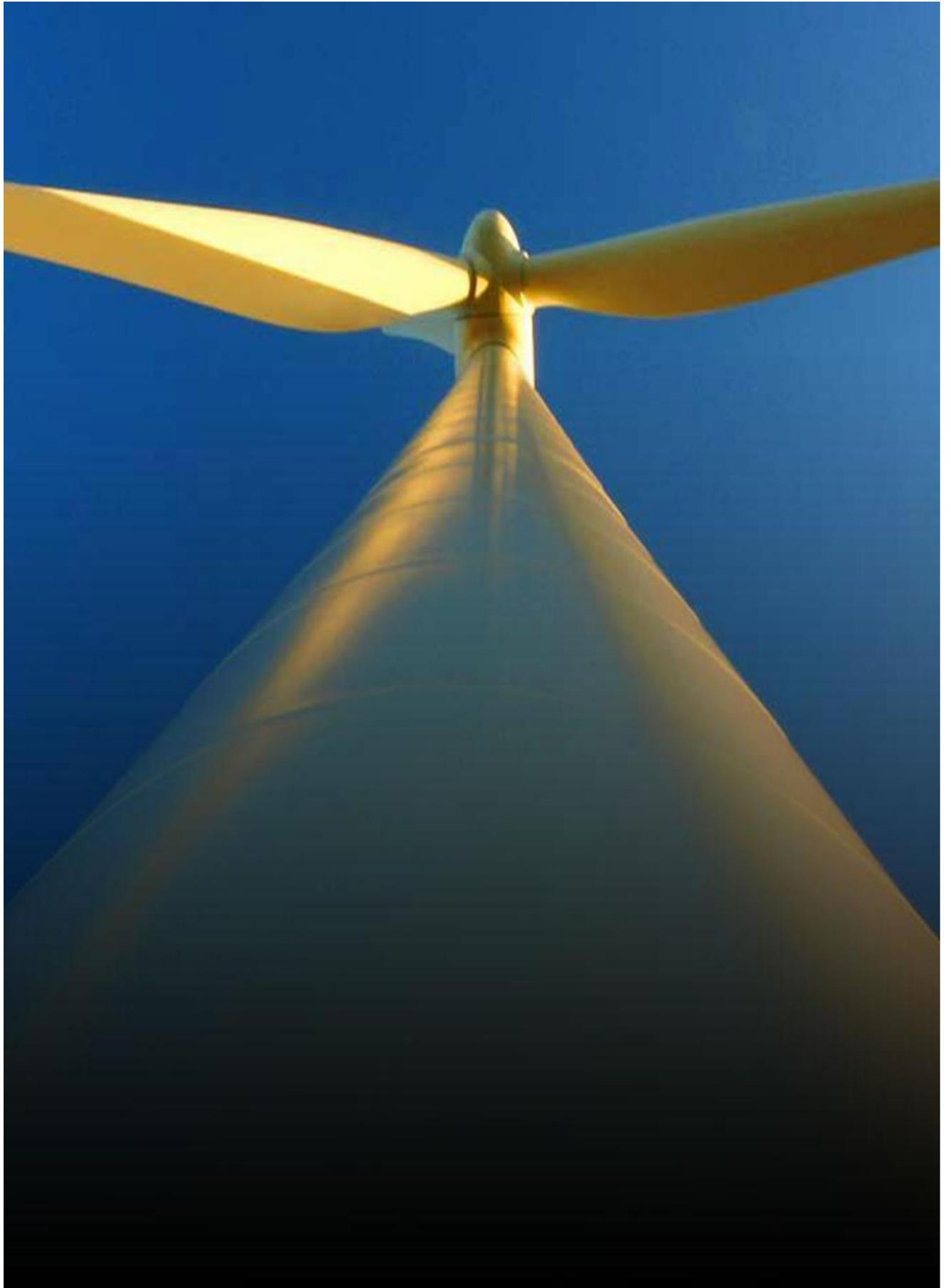
With staff efforts primarily focused on responding to legislative mandates and task force inquiries throughout FY 2017, minimal outreach and engagement with stakeholders occurred.



The MCEC Advisory Council was appointed and met on September 7, 2016 at MDE headquarters in Baltimore.

For the second year in a row, the MCEC Board opted not to host the Maryland Clean Energy Summit but did host an annual MCEC Annual Legislative Reception.

At the request of the World Trade Center Institute in March 2017, MCEC hosted a delegation of energy officials from Armenia.



## Responding to General Assembly Mandates

### MCEC Task Force & Recommendations

During the 2017 General Assembly Session SB 313; “AN ACT concerning Economic Development – Maryland Energy Innovation Institute”; passed with a charge that created the Maryland Energy Innovation Institute and alignment with the University of Maryland College Park wherein MCEC could better use its financing capabilities to support energy innovation. The bill included a commitment over a five year period of \$1.5M in funding per year.

Following the legislation being signed, MOUs drafted in FY 2017 between MCEC, USM, and MEA to facilitate the transfer of funds, were executed in early FY’18. At the time of this report, MCEC and USM are in discussions about relocating MCEC to the Tech Ventures building near campus to more easily facilitate interaction and cooperative efforts.

### Residential PACE Study

Responding to the charge of MCEC in HB 387; “Clean Energy Loan Program - Residential Property – Study”; MCEC led a stakeholder work group to conduct a study which was intended to determine design and implementation strategies for a residential clean energy loan program.

*See Appendix B: MCEC RESIDENTIAL PACE Study Work Group Participants*

In general, MCEC concluded that certain key stakeholder groups, so adamantly opposed to the potential to implement Residential PACE financing, would make passage of enabling legislation very unlikely in the 2017 Session. MCEC also concluded that more time and funding was needed to design and implement a program should the related legislation pass, but that MCEC could serve as a body to centralize any program designed for operation on a statewide basis.

### Key findings and recommendations from the report are as follows:

- There was no consensus among stakeholders regarding the establishment of RPACE in Maryland.
- Maryland energy and environmental policy goals call for the implementation of energy efficiency measures and the adoption of renewable energy generation solutions that will facilitate desirable reduction of greenhouse gas emissions. Public funds alone cannot adequately address the potential demand for these investments.
- To better enable consumers to make investments in energy improvements, there is a need for financial solutions that provide convenient, affordable, and timely access to capital beyond conventional lending options available in the marketplace today.
- The RPACE financing model has been deployed in other states and has been utilized by communities and consumers to achieve desired outcomes. Best practices for implementing RPACE lending programs may be utilized in a Maryland model program as a solution in the future. Contractors support the implementation of RPACE financing tools to facilitate more demand for their services and the resulting employment opportunities could be beneficial to the Maryland economy.
- During the study process concerns were raised about the impact of PACE liens on potential refinancing and sale of properties so encumbered, especially in light of current FHFA policies which “*prohibit the purchase of a mortgage where the property has a first-lien PACE loan attached to it.*” This concern remains to be a very significant consideration. Other stakeholders noted robust disclosure requirements to address this concern which in their opinion, along with other programmatic requirements, adequately protect property owners. MCEC concludes the need to insure adequate consumer protections in any potential program design is clearly paramount.

- A centralized statewide oversight authority (joint powers authority) is called for as part of best practices to implement, manage, and provide access to tax exempt capital for program success. MCEC is statutorily enabled to serve in that capacity but currently lacks the resources to do so.
- Program oversight and management could possibly be executed at the regional or local scale at a less advantageous smaller scale and limiting access to a broader customer base. However, at this time sources of funding to cover the cost of designing, building, implementing and managing an RPACE program are uncertain.
- Additional work among stakeholders, especially buy-in from Maryland counties, is necessary in order to prepare a RPACE policy for consideration by Maryland policy makers. With this, policymakers will be in the best position to entertain or adopt policy that will enable RPACE financing in Maryland.

**MCEC formulated the following recommendations:**

- Continued work should be done to design a statewide program that utilizes best practices, includes the necessary consumer protections and budgets for ongoing administrative support as well as marketing. By doing so, the state will be better positioned to act if and when the FHFA guidance is amended.
- Any proposed enabling legislation should identify a source of revenue to fund a statewide RPACE program effort, and authorize MCEC to serve as the Joint Powers Authority to administer and manage a statewide program with certain key performance indicators established for reporting on related impacts.
- The US Department of Energy best practice guidance for management and consumer protection should be considered and possibly required, to be incorporated into in any regulation enabling potential program/s to be established in Maryland.
- Those stakeholders identified in HB 387, be somehow engaged in future program design and build efforts to ensure that concerns identified in this study be addressed in any future program construct.



## Advancing Finance Programs

### MHELP Status: Program Closed



### Program Summary:

Over seven years ago the Maryland Energy Administration (MEA) partnered with the Maryland Clean Energy Center (MCEC) to create an innovative energy efficiency financing initiative for Maryland property owners. Financial support for the Maryland Home Energy Loan Program (MHELP) came from a U.S. Department of Energy grant to MEA. Since 2011, lending has been administered and funded by Mariner Finance, a Maryland based finance company.

### Initial Program Capitalization:

As part of the American Recovery and Reinvestment Act, enacted in 2009, MEA was awarded a \$4,000,000 grant from the U.S. Department of Energy to develop an innovative residential energy efficiency program. MEA and MCEC partnered in the creation of the MHELP program. MCEC received approximately \$3,440,000 for facilitation of the residential home energy loan program.

### Program Structure:

Public funds have been used in the past for loan guarantee and interest rate subsidy to buy down the cost of capital from market rates averaging 14.99% to more consumer friendly 6.99%, and subsequently 9.99% interest rates. The program funding partner also provided for a same as cash 0% interest incentive for loans paid off with in one year.

This program has proven to be effective providing access to capital for residential homeowners, regardless of income, with credit scores at or above 620. Over 150 contractors are enrolled as participants in the program and like the fast turnaround time for loan/project approvals as well as quick payment of their invoices as work is completed. Consumers benefit from access to this source of capital without having to rely on more costly credit card debt or tapping into their savings.

As of June 30, 2017 the MHELP program has recorded a total of only 16 loan defaults valued at approximately \$102,000 and has collected approximately \$16,743 in payments from the defaulted loans.

The program discontinued new lending as of August 1, 2017.

### Cumulative Program Results (6/30/17):

- 4,075 loans
- \$30.8 million in leveraged financing
- 52 direct loans
- \$412,956 in direct lending
- Approx. 13.2 million KWH energy savings
- Approx. 67,000 FTE Contractor Job Hours

## MDPACE Status: Program Evolves

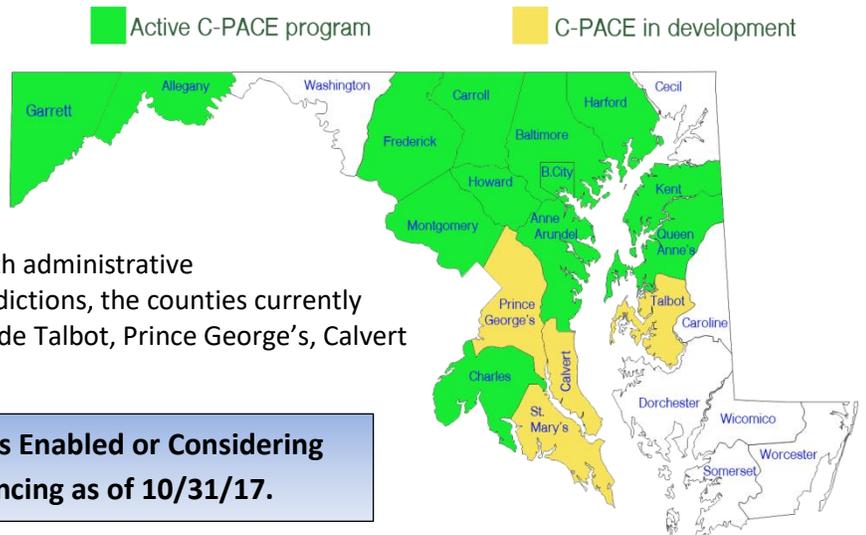
### Program Summary:

MCEC launched MD- PACE in 2014 and related efforts were geared toward helping taxing jurisdictions, 23 counties and the City of Baltimore, pass the ordinance necessary to enable this financing structure to be used by commercial, industrial, agricultural and not-for-profit property owners.



MCEC, through a partnership with Pace Financial Servicing, also provides access to administrative capability at no direct cost to jurisdictions enrolled in the MD-PACE program.

At the time of this report, there are 13 jurisdictions with enabling ordinances passed and 11 with administrative capabilities in place. This reflects an increase from FY 2016 when only 5 jurisdictions were enrolled and 4 with administrative capabilities in place. Of the remaining jurisdictions, the counties currently taking steps to enable PACE financing include Talbot, Prince George's, Calvert and St. Mary's.



**MAP of Jurisdictions Enabled or Considering Enabling PACE Financing as of 10/31/17.**

**Since program inception in 2014:**

- 11 deals have closed totaling \$5.8MM in transactions. (Montgomery and Kent Counties)
- 6 deals pending with owners committed, valued at \$22MM (Montgomery County, Baltimore County, Baltimore City)
- Number of Contractors enrolled: 53 compared to 23 in FY 2016
- Number of Capital Providers enrolled: 11 compared to 5 in FY 2016



Using DOE grant funds over a three year period, MCEC is helping drive regional use of PACE financing for energy improvements, and shares best practices with MAPA partners. Planned activities and grant deliverables include marketing, outreach and training events. A related website has been launched and webinars planned in FY 2017 will be held in FY 2018.



## MCAP Status

### Program Summary:

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.

**Cumulative MCAP bond issuance through the period ending June 30, 2017 is \$14,296,017 for tax-exempt bonds and \$424,625 for taxable bonds.** Proceeds from the five 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 and cost of issuance.

### MCAP Revenues:

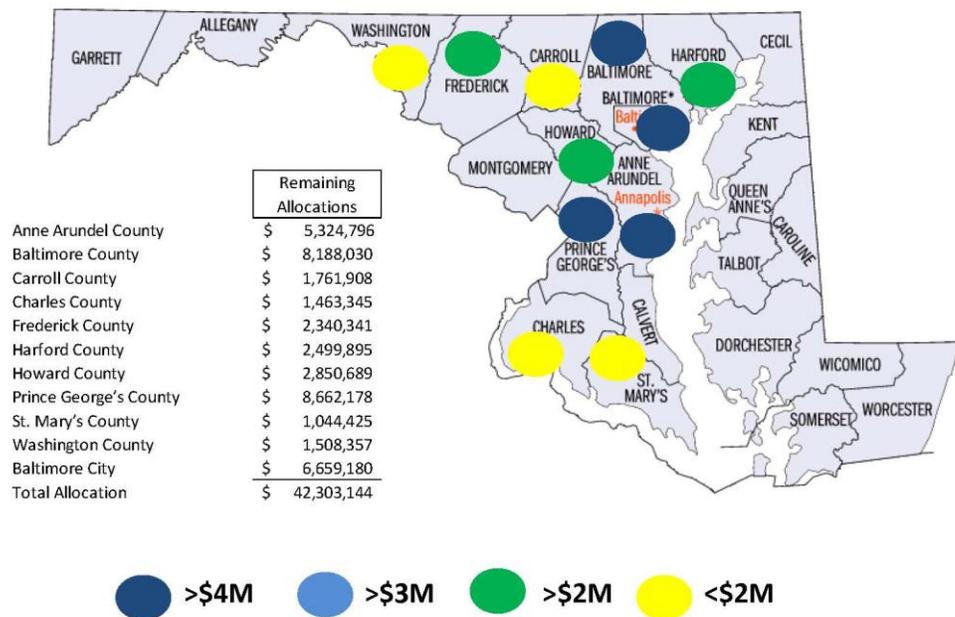
**Cumulative bond issuance revenue earned through the period ending June 30, 2017 is \$379,390.** There was no bond issuance revenue in FY 2016. **Cumulative administrative and performance related fees earned through the period ending June 30, 2017 are approximately \$134,879.** MCEC earns administrative 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. **MCEC earned approximately \$54,627 in MCAP administrative and performance related fees during FY 2017.**

**Program Summary:**

In an effort to still provide assistance to small and mid-sized projects, MCEC is encouraging the use of Qualified Energy Conservation Bonds (QECBs) through the Maryland SAVES program. This Green Community program allows QECBs, low cost federally subsidized debt, to be used for the benefit private business entities and not merely limited to municipal projects. During FY 2017, MCEC worked with its partner Clean Source Capital to build awareness of available technical support with targeted outreach to those jurisdictions awarded allocations as well as contractors with projects under development. At the time of this report the Maryland QECB allocations are illustrated in Exhibit A.

MCEC identified a number of challenges and reasons why QECBs have not been embraced for use by municipalities and became aware of discussions by congressional leaders looking to pull back from states that have not and reallocate unused allocations to those that have. With this in mind and no new projects financed in FY 2017- and only few pending after this outreach effort- MCEC began working with the Maryland Energy Administration and the Maryland Association of Counties. As part of the Maryland Commission on Climate Change Mitigation Working Group QECB Subgroup, MCEC is cooperating in efforts to consider and develop new strategies for stakeholders in the state to benefit from access to QECBS and to encourage their use before any change in availability occurs.

**Exhibit A: Remaining Maryland Qualified Energy Conservation Bond Allocations**



# Stakeholder Outreach & Engagement

## Briefed Visiting Dignitaries

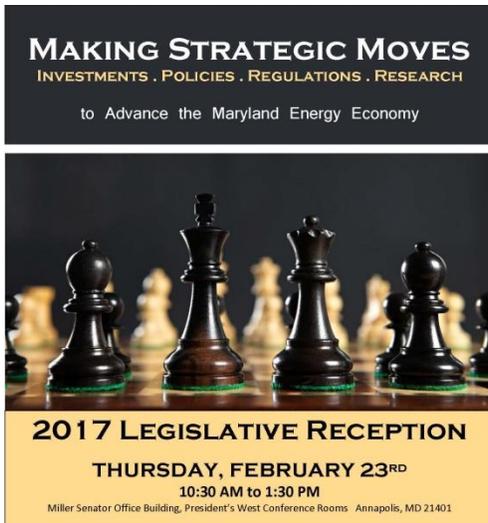
The World Trade Center Institute occasionally contacts MCEC to meet with foreign trade groups working on energy related matters. In March of 2017, MCEC hosted a delegation from Armenia visiting Maryland on a program titled “Developing the Solar Energy Sector”. This group of officials hoped to gain insight into the development and implementation of U.S. policy for solar energy production and integration into the grid, including the various actors involved – federal, state, and local government; NGOs; academia; think tanks; and grassroots groups.

The delegation was specifically interested to gain insight into MCEC's work towards establishing a Green Bank in Maryland as well as MCEC's partnership with the Maryland Energy Administration and the U.S. Department of Energy to develop innovative energy efficiency financing initiatives for private owners to help jumpstart Maryland's energy economy.



Hayk Badalyan, Head of the Energy Department for the Ministry of Energy Infrastructures and Natural Resources of the Republic of Armenia; and Gegham Kirakosyan, Analyst with the Armenia Renewable Resources and Energy Efficiency Fund were among members of a delegation of energy officials from Armenia visiting MCEC offices in Annapolis in March 2017. They were greeted and briefed by Chris Rice from MEA; Harry Warren, President, CleanGrid Advisors LLC; along with Kathy Magruder and Wyatt Shiflett of MCEC

# 2017 Annual Legislative Day Event



Clockwise: Board member Andrea Pelletier helps MCEC Administrator Casey Neal; Board member Deborah Risher and daughter volunteer at the registration table; Board Chair Josh Greene thanks MDE Secretary Ben Grumbles; Board members Wachsmann and Tung among the audience; and Senator Hershey with MCEC Executive Director Kathy Magruder.



## MCEC FY 2017 Advisory Council Roster

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. Council members for FY 2017 are listed as follows:

**Susan Corry**

*Energy Conservation Manager, Facilities Manager  
University of Maryland Office of Sustainability*

**Betsy Delozier**

*Owner, Master Electrician  
Big D Electric*

**Larisa Dobriansky**

*Chief Business and Regulatory Innovations Officer  
General MicroGrids*

**Allan Gorsuch**

*Manager  
ESMEC Energy Trust*

**Donald Hanky**

*Vice President  
The Whiting -Turner Contracting Co.*

**Ed Hatcher**

*President  
The Hatcher Group*

**Brent Hollenbeck**

*CEO  
Timberock Energy Solutions  
MD Smart Energy Corporation*

**Michael Mock**

*Vice President, Industry Development  
The Electrical Alliance*

**Rebecca Rush**

*President  
Renewable Energy Stewardship*

**Alan Scott**

*Category Sourcing Senior Manager  
Verizon*

**Haibin Sun**

*Director  
Exelon Cooperation*

**Barbara Bauman Tyran**

*Director, Washington & State Relations  
Electric Power Research Institute*

**Steve Welsh**

*President & CEO  
Standard Energy Services*

**Malcolm Woolf**

*Senior VP, Policy & Government Affairs  
Advanced Energy Economy*

**Fred Deluca**

*CEO  
Energy3, LLC*

**Joanne Ivancic**

*Executive Director  
Advanced Biofuels, USA*

**Andrew Kays**

*Deputy Director  
Northeast Maryland Waste Disposal Authority*

**Connie Lausten**

*Principal  
cLausten LLC*

**Vince Scarfo**

*Chief Marketing Officer and Sales Officer  
HY-TEK Bio, LLC*

**Sabrina Bachman**

*Director, Community-Maryland  
US Green Building Council, Maryland*

**Dan Bresette**

*Director of Government  
Alliance to Save Energy*

**William Ellis**

*Manager, Demand Side Management  
Pepco Holdings*

**Allen Freifeld**

*General Counsel SVP  
Viridity Energy*

**Brian Funk**

*Principal  
Funkesolutions*

**Michael Giangrandi**

CEO  
AJ Michaels

**Chris Kelley**

Vice President Energy Solutions  
Energetics Incorporated

**Bryan Levy**

President  
XChanger Companies

**Nandini Mouli**

President/CEO  
eSai Consulting

**Nick Roros**

Outside Sales, Energy Efficiency  
Mobern Lighting

**Christopher Russell**

Visiting Fellow, Industrial  
American Council for an Energy Efficient Economy

**Cherise Seals**

Business Development Manager, Regional Markets  
Constellation

**Alison Shea**

Account Executive  
Siemens Industry Inc.

**Brian Toll**

President  
Ecobeco

**Brian Hager**

Manager, Central Approval Dept.  
Mariner Finance

**Eric Heintz**

Vice President  
M&T Bank

**Elizabeth Kaiga**

Director, Strategy & Client Development  
CohnReznick

**Claudia Meer**

Managing Director, Energy and Structured Finance  
Clark Construction

**Anders Pedersen**

Energy Specialist  
World Bank

**Jeffrey Schub**

Executive Director  
Coalition for Green Capital

**Louis Stanley II**

Business Development  
NRGroup

**Karl Gawell**

Director  
Geothermal Energy Association

**Jack Neil**

Principal  
Jack Neil & Associates

**Adam Santry**

President  
Allied Well Drilling/ Allied Environmental Services

**Rick Peters**

President  
Solar Energy Services

**Grant Shmelzer**

Executive Director  
IEC-Chesapeake

**Yolanda Seabrooks**

Program Director  
Brian D Robertson Memorial Solar Schools Fund

**Nicole Steele**

Executive Director  
Grid Alternatives – Mid-Atlantic

**Rob D. Wallace**

President and CEO  
Power 52

**Harry Warren**

President  
CleanGrid Advisors, LLC

**Cary Bloyd**

Senior Staff Scientist, Electricity Infrastructure  
Pacific Northwest National Laboratory

**Kevin Brown**  
*Senior Partner*  
*Hobbs & Towne Inc.*

**Barry Cole**  
*Executive VP, Director-Technology Development*  
*OTEC International LLC*

**M. Peder Maarbjerg**  
*Assistant Director*  
*ARPA-E*

**Arjun Makhijani**  
*President*  
*Institute for Energy & Environmental Research*

**W. Kevin McTigue**  
*Senior Corporate VP*  
*Global Technical Systems*

**Austin Montgomery**  
*Program Manager*  
*Carnegie Mellon University; Software Engineering*  
*Institute*

**Robert Nicholson**  
*President*  
*Institute for Energy & Environmental Research*

**Mike Petito**  
*Commercial & Industrial Accounts Manager*  
*Sharp Energy*

**Robert Glidewell**  
*Area Manager Government Relations & Business*  
*Relations*  
*Washington Gas*

**Craig Goodman**  
*President & CEO*  
*National Energy Marketers Assoc.*

**Michael Hill**  
*General Counsel, Corporate Secretary*  
*Electricite de France*

**John Jimison**  
*Managing Director*  
*Energy Future Coalition*

**John Quinn**  
*Director of State Affairs*  
*BGE*

**Richard Walsh**  
*Program Lead, Clean Energy Solutions*  
*WGL Energy*

**Matthew Mullin**  
*President and CEO*  
*High Street Strategies, LLC*

**Ted Atwood**  
*Director of the Baltimore City Energy Office*  
*Baltimore City*

**Erica Bannerman**  
*Energy Manager*  
*Prince George's County Office of Central Services*

**Paula Carmody**  
*People's Counsel*  
*Office of People's Counsel*

**Shannon Moore**  
*Acting Manager*  
*Office of Sustainability and Environmental Resources*  
*Frederic County Government*

**Dan Rider**  
*Program Manager, Forest Stewardship & Utilization*  
*Maryland Department of Natural Resources*

## **MCEC FY 2018 Priorities**

### **FY 2018**

At the close of FY 2017 MCEC staff and Board began implementing the MEI2 Act statute directives and working on two pending MCAP project transactions.

In the remaining months of FY 2018 MCEC staff will direct their attention to fulfill certain statute directed obligations, including:

- Energy Storage Study Work Group Participation
- Renewable Portfolio Standard Study Work Group Participation
- Establishing the MCEC Finance & Investment Advisory Committee
- Begin work on report for General Assembly due in December 2019

MCEC staff will also continue to advance various financing capabilities, and building a pipeline of potential revenue generating transactions. An investment of staff time and resources for outreach to target audiences for MCAP bond transactions is envisioned.

In the coming months, staff will work with qualified private sector partners to investigate the possibility of implementing a new, improved version of the Maryland Home Energy Loan Program (MHELP) to again provide access to capital for residential property owners.

As the MD-PACE Program continues to gain momentum MCEC will work with Mid-Atlantic PACE Alliance grant funds received to build awareness for and adoption of this financing tool. During FY 2018 MCEC, in partnership with Pace Financial Servicing (PFS), will work to encourage the passage of enabling legislation and implement program administration capabilities with the remaining jurisdictions in Maryland.

MCEC is planning to host the Maryland Clean Energy Summit 2018 in October of the coming fiscal year, with the theme of “Gearing up for the Future: Innovation for Grid Efficiency, Resiliency and Security”. The conference will include a half day Innovation Exchange event to build awareness of new technologies underdevelopment that may have potential to be impactful for the clean energy sector.

Based on current discussions, MCEC anticipates that some staff time and resources in FY 2018 will be dedicated to renovation of space and relocation of offices to the Tech Ventures Building in College Park near the University of Maryland campus. Some enhancements to current staffing are also envisioned to occur in this timeframe.

# APPENDIX A: Maryland Energy Sector Employment Data

| MARYLAND ENERGY SECTOR EMPLOYMENT DATA for Q1 2013   |                          |  |                     |                        |                          |                         |  |
|--|--------------------------|--|---------------------|------------------------|--------------------------|-------------------------|--|
| NAICS Code & Industry  | Establishments Reporting | January Employment                     | February Employment | March Employment       | Total Quarterly Earnings | Weekly Average Earnings |  |
| NAICS 2211 Power generation and supply *   | 91                       | 9,050                                  | 8,945               | 8,877                  | \$375,001,135            | \$3,220                 |  |
| NAICS 22121 Natural gas distribution*  | 16                       | 497                                    | 516                 | 520                    | \$10,137,529             | \$1,526                 |  |
| NAICS 23712 Oil and gas pipeline construction  | 37                       | 662                                    | 649                 | 664                    | \$8,124,528              | \$949                   |  |
| NAICS 23821 Electrical and wiring contractors  | 1945                     | 21,706                                 | 21,938              | 22,005                 | \$332,583,457            | \$1,169                 |  |
| NAICS 23822 Plumbing and hvac contractors  | 2108                     | 25,249                                 | 25,217              | 25,365                 | \$375,513,104            | \$1,143                 |  |
| NAICS 213111 Drilling gas wells  | 15                       | 167                                    | 176                 | 174                    | \$2,356,416              | \$1,052                 |  |
| NAICS 213112 Support activities for oil and gas operations   | 13                       | 39                                     | 38                  | 33                     | \$518,725                | \$1,088                 |  |
| NAICS 221112 Fossil fuel electric power generation   | 20                       | 1,833                                  | 1,785               | 1,791                  | \$121,061,575            | \$5,165                 |  |
| NAICS 237130 Power and communication system construction   | 161                      | 3,414                                  | 3,484               | 3,432                  | \$52,932,268             | \$1,182                 |  |
| NAICS 238211 Residential electrical contractors  | 1,102                    | 5,694                                  | 5,634               | 5,726                  | \$63,926,767             | \$865                   |  |
| NAICS 238212 Nonresidential electrical contractors   | 843                      | 16,012                                 | 16,304              | 16,279                 | \$268,656,690            | \$1,276                 |  |
| NAICS 32419 Other petroleum and coal products manufacturing *  | 52                       | 799                                    | 800                 | 810                    | \$16,051,194             | \$1,538                 |  |
| NAICS 3334 HVAC and commercial refrigeration equipment *   | 4                        | 76                                     | 71                  | 70                     | \$1,943,493              | \$2,067                 |  |
| NAICS 3353 Electrical equipment manufacturing *  | 36                       | 1,248                                  | 1,259               | 1,258                  | \$17,422,138             | \$1,068                 |  |
| NAICS 3359 Other electrical equipment and component mfg. *   | 21                       | 934                                    | 929                 | 926                    | \$13,596,825             | \$1,125                 |  |
| NAICS 333613 Wind power transmission equipment mfg.  | 43                       | 548                                    | 518                 | 527                    | \$10,794,389             | \$1,564                 |  |
| NAICS 334515 Electricity and signal testing instruments  | 4                        | 57                                     | 57                  | 56                     | \$955,336                | \$1,297                 |  |
| NAICS 335929 Other communication and energy wire mfg.  | 19                       | 974                                    | 988                 | 949                    | \$34,206,193             | \$2,712                 |  |
| NAICS 42361 Elec. equip. and wiring merchant wholesalers   | 3                        | 97                                     | 77                  | 76                     | \$806,305                | \$744                   |  |
| NAICS 42369 Other electronic parts merchant wholesalers  | 208                      | 2,380                                  | 2,377               | 2,374                  | \$49,921,722             | \$1,616                 |  |
| NAICS 42373 HVAC equip. merchant wholesalers   | 264                      | 3,108                                  | 3,109               | 3,109                  | \$77,139,815             | \$1,909                 |  |
| NAICS 42471 Petroleum bulk stations and terminals  | 132                      | 1,498                                  | 1,478               | 1,479                  | \$27,956,983             | \$1,448                 |  |
| NAICS 42472 Other petroleum merchant wholesalers   | 19                       | 262                                    | 260                 | 266                    | \$5,526,874              | \$1,619                 |  |
| NAICS 48621 Pipeline transportation of natural gas *   | 64                       | 696                                    | 700                 | 707                    | \$11,131,484             | \$1,221                 |  |
| NAICS 541350 Building inspection services  | 5                        | 64                                     | 63                  | 61                     | \$1,524,931              | \$1,872                 |  |
| NAICS 541690 Energy consulting services  | 150                      | 473                                    | 485                 | 482                    | \$5,507,448              | \$883                   |  |
| NAICS 624229 Energy Assistance Programs  | 579                      | 3,906                                  | 3,874               | 3,879                  | \$89,063,923             | \$1,763                 |  |
| NAICS 813312 Energy and conservation organizations   | 72                       | 561                                    | 564                 | 574                    | \$5,926,687              | \$805                   |  |
| NAICS 813319 Other Energy advocacy organizations   | 161                      | 1,485                                  | 1,513               | 1,514                  | \$16,534,534             | \$846                   |  |
| <b>Totals</b>  | <b>8411</b>              | <b>105,061</b>                         | <b>105,405</b>      | <b>105,605</b>         | <b>\$2,016,795,356</b>   | <b>\$962</b>            |  |
| * Adjusted to Eliminate Duplication  |                          |  |                     |                        |                          |                         |  |
| Source: Quarterly Census of Employment and Wages (QCEW), 1st Quarter 2013<br><a href="http://www.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables">http://www.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables</a> |                          | <b>Estimated Total Annual Earnings</b> |                     | <b>\$8,067,181,424</b> |                          |                         |  |
| Compiled by: Andi Moser, former MD Assistant Secretary of Labor  |                          | <b>Average Weekly Earning</b>          |                     | <b>\$1,523</b>         |                          |                         |  |

# Appendix A: Maryland Energy Sector Employment Data

| MARYLAND ENERGY SECTOR EMPLOYMENT DATA for Q2 2015  |                          |                  |                |                 |  |                         |  |  |  |
|---|--------------------------|------------------|----------------|-----------------|--|-------------------------|--|--|--|
| NAICS Code & Industry   | Establishments Reporting | April Employment | May Employment | June Employment | Total Quarterly Earnings               | Weekly Average Earnings |  |  |  |
| NAICS 2211 Power generation and supply *  | 87                       | 8,684            | 8,710          | 8,799           | \$201,889,876                          | \$1,779                 |  |  |  |
| NAICS 22111 Electric power generation   | 32                       | 3,066            | 3,062          | 3,113           | \$81,095,025                           | \$2,025                 |  |  |  |
| NAICS 22112 Electric power transmission and distribution  | 55                       | 5,618            | 5,648          | 5,686           | \$120,794,851                          | \$1,644                 |  |  |  |
| NAICS 23712 Oil and gas pipeline construction   | 37                       | 662              | 649            | 664             | \$8,124,528                            | \$949                   |  |  |  |
| NAICS 23821 Electrical and wiring contractors   | 1924                     | 21,681           | 21,816         | 21,962          | \$335,141,363                          | \$1,182                 |  |  |  |
| NAICS 23822 Plumbing and hvac contractors   | 2104                     | 26,588           | 27,080         | 27,706          | \$418,613,203                          | \$1,187                 |  |  |  |
| NAICS 213111 Drilling gas wells   | 12                       | 180              | 178            | 184             | \$2,325,326                            | \$990                   |  |  |  |
| NAICS 213112 Support activities for oil and gas operations  | 10                       | 36               | 37             | 40              | \$483,481                              | \$987                   |  |  |  |
| NAICS 221112 Fossil fuel electric power generation  | 19                       | 2,161            | 2,146          | 2,177           | \$58,449,276                           | \$2,080                 |  |  |  |
| NAICS 221210 Natural gas distribution   | 18                       | 543              | 535            | 542             | \$10,834,279                           | \$1,543                 |  |  |  |
| NAICS 237120 Oil and gas pipeline construction  | 41                       | 819              | 887            | 941             | \$11,681,943                           | \$1,018                 |  |  |  |
| NAICS 237130 Power and communication system construction  | 165                      | 3,812            | 3,871          | 4,053           | \$70,732,270                           | \$1,391                 |  |  |  |
| NAICS 238211 Residential electrical contractors   | 1,095                    | 5,840            | 5,944          | 6,033           | \$73,422,575                           | \$951                   |  |  |  |
| NAICS 238212 Nonresidential electrical contractors  | 829                      | 15,841           | 15,872         | 15,929          | \$261,718,788                          | \$1,268                 |  |  |  |
| NAICS 3241 Petroleum and coal products manufacturing*   | 54                       | 842              | 861            | 867             | \$15,886,028                           | \$1,426                 |  |  |  |
| NAICS 3359 Other electrical equipment and component mfg.*   | 49                       | 758              | 756            | 767             | \$14,747,095                           | \$1,492                 |  |  |  |
| NAICS 32419 Other petroleum and coal products mfg.  | 4                        | 74               | 77             | 71              | \$1,434,370                            | \$1,491                 |  |  |  |
| NAICS 33341 Hvac and commercial refrigeration equipment   | 38                       | 1,305            | 1,323          | 1,328           | \$20,110,532                           | \$1,173                 |  |  |  |
| NAICS 33531 Electrical equipment manufacturing  | 22                       | 934              | 934            | 946             | \$13,894,775                           | \$1,139                 |  |  |  |
| NAICS 33599 Other electrical equipment and component mfg.   | 26                       | 278              | 284            | 288             | \$4,464,283                            | \$1,212                 |  |  |  |
| NAICS 333613 Wind power transmission equipment mfg.   | 5                        | 55               | 53             | 54              | \$909,291                              | \$1,295                 |  |  |  |
| NAICS 334515 Electricity and signal testing instruments   | 22                       | 886              | 891            | 886             | \$26,883,023                           | \$2,330                 |  |  |  |
| NAICS 335931 Current-carrying wire device manufacturing   | 4                        | 17               | 18             | 18              | \$214,911                              | \$936                   |  |  |  |
| NAICS 42361 Elec. equip. and wiring merchant wholesalers  | 208                      | 2,457            | 2,462          | 2,466           | \$47,688,301                           | \$1,490                 |  |  |  |
| NAICS 42369 Other electronic parts merchant wholesalers   | 238                      | 2,989            | 2,959          | 2,969           | \$68,473,347                           | \$1,772                 |  |  |  |
| NAICS 42373 Hvac equip. merchant wholesalers  | 139                      | 1,482            | 1,490          | 1,513           | \$26,764,580                           | \$1,377                 |  |  |  |
| NAICS 42471 Petroleum bulk stations and terminals   | 23                       | 299              | 300            | 307             | \$6,052,496                            | \$1,542                 |  |  |  |
| NAICS 42472 Other petroleum merchant wholesalers  | 63                       | 682              | 677            | 679             | \$12,261,151                           | \$1,388                 |  |  |  |
| NAICS 48621 Pipeline transportation of natural gas  | 5                        | 65               | 66             | 66              | \$1,368,004                            | \$1,603                 |  |  |  |
| NAICS 541350 Building inspection services   | 160                      | 543              | 558            | 582             | \$7,197,857                            | \$987                   |  |  |  |
| NAICS 541620 Environmental consulting services  | 288                      | 3,265            | 3,264          | 3,316           | \$58,819,425                           | \$1,379                 |  |  |  |
| NAICS 541690 Energy consulting services   | 573                      | 4,207            | 4,238          | 4,269           | \$95,388,180                           | \$1,731                 |  |  |  |
| NAICS 624229 Energy Assistance Programs   | 76                       | 620              | 621            | 618             | \$6,331,389                            | \$786                   |  |  |  |
| NAICS 813312 Environment and conservation organizations   | 159                      | 1,617            | 1,670          | 1,762           | \$19,878,187                           | \$909                   |  |  |  |
| NAICS 813319 Other Energy advocacy organizations  | 223                      | 1,717            | 1,749          | 1,775           | \$22,293,589                           | \$982                   |  |  |  |
| <b>Totals</b>   | <b>8807</b>              | <b>120,623</b>   | <b>121,686</b> | <b>123,376</b>  | <b>\$2,126,367,598</b>                 |                         |  |  |  |
| * 6 digit NAICS Unavailable   |                          |                  |                |                 |  |                         |  |  |  |
| Source: QCEW, 2nd Quarter 2015  |                          |                  |                |                 | <b>Estimated Total Annual Earnings</b> | <b>\$9,505,470,392</b>  |  |  |  |
| <a href="http://www.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables">http://www.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables</a> |                          |                  |                |                 | <b>Average Weekly Earning</b>          | <b>\$1,129</b>          |  |  |  |
| Compiled by: Andy Moser, former MD Assistant Secretary of Labor   |                          |                  |                |                 |  |                         |  |  |  |

## Appendix B: MCEC RESIDENTIAL PACE Study Work Group Participants

| <b>RESI PACE WORKGROUP</b>    |                  |                                    |                                      |
|-------------------------------|------------------|------------------------------------|--------------------------------------|
| <b>First Name</b>             | <b>Last Name</b> | <b>Organization</b>                | <b>Title</b>                         |
| <b>Required Participation</b> |                  |                                    |                                      |
| Wyatt                         | Shiflett         | MCEC                               | Director of Finance Programs         |
| Kathleen                      | Magruder         | MCEC                               | Executive Director                   |
| Alex                          | Choi             | Maryland Bankers Association       | Government Affairs Specialist        |
| Kathleen                      | Murphy           | Maryland Bankers Association       | Executive Director                   |
| Mindy                         | Lehman           | Maryland Bankers Association       | Vice President of Government Affairs |
| John                          | Fiastro          | MEA                                | Director of Government Affairs       |
| Michael                       | Sanderson        | MACO                               | Executive Director                   |
| James                         | McGarry          | Chesapeake Climate Action Network  | Policy Director                      |
| Cliff                         | Stanton          | Renew Financial                    | Executive Vice President             |
| Mark                          | Posner           | MD Sierra Club                     | Ex Com at large                      |
| <b>Capital Providers</b>      |                  |                                    |                                      |
| Gabe                          | Maser            | Renovate America                   | Regional Director for Policy         |
| Mike                          | Lemyre           | Ygrene Energy Fund                 | Residential Sales Representative     |
| Cisco                         | DeVries          | Renew Financial                    | CEO                                  |
| David                         | Crow             | Montgomery County Finance          | Fiscal Projects Manager              |
| <b>Legislators</b>            |                  |                                    |                                      |
| Charles                       | Barkley          | MDGA                               | Delegate                             |
| <b>Other</b>                  |                  |                                    |                                      |
| Brian                         | Toll             | Ecobeco, Efficiency First          | President                            |
| CJ                            | DeSantis         | CounterPointe Energy Solutions     | Co-Founder                           |
| Robert                        | Enten            | Gordon Feinblatt, LLC              | Lobbyist                             |
| David                         | Gabrielson       | PACENation                         | Executive Director                   |
| Doris                         | Mason            | Rural Maryland Council             | Chair                                |
| Michael                       | Giangrandi       | Aj Michael                         |                                      |
| Charlotte                     | Davis            | Rural Maryland Council             | Executive Director of RMC            |
| Meredith                      | Donaho           | Rural Maryland Council             | Representative                       |
| Jonas                         | Jacobson         | Perry, White, Ross & Jacobson, LLC | Environmental Expert                 |
| Sean                          | Schmidt          | MD Alliance of Energy Contractors  | Vice Chair                           |
| Debbie                        | Risher           | Belair Engineering Services        | President & Owner                    |
| Susan                         | Mitchell         | Maryland Realtors Association      | Director of Government Affairs       |
| Michelle                      | Vigen            | Montgomery County                  | Senior Energy Planner                |
| Erika                         | Howard           | Office of Sen. Hershey             | Assistant                            |
| Amy                           | Samman           | Montgomery County                  | Intergovernmental Relations Liason   |

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