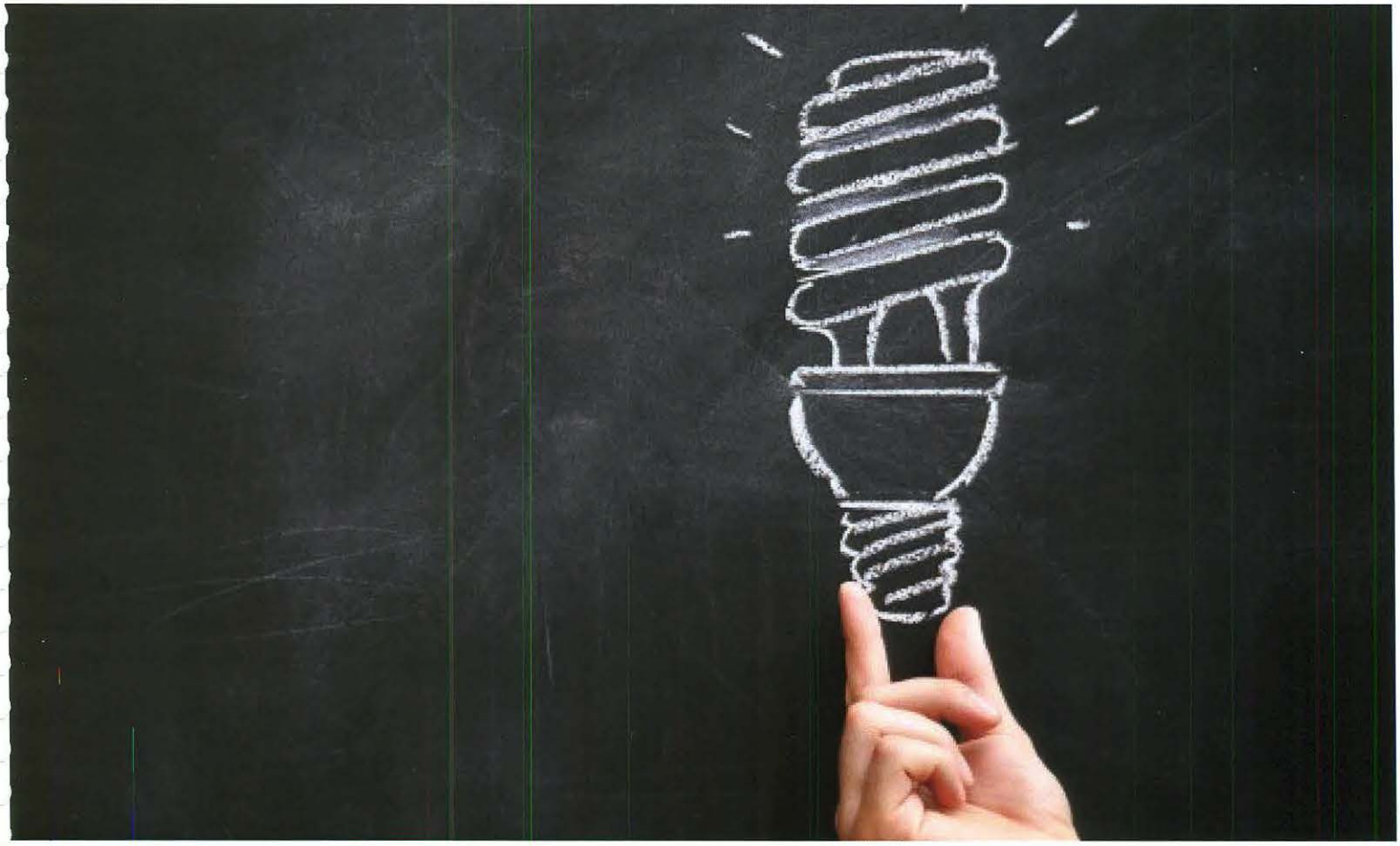
MARYLAND
CLEAN ENERGY CENTER

FY'16 Annual Report

July 2015 to July 2016



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Companies like Enernoc, with offices in Baltimore use real time analytics and technology solutions to manage demand response to for their clients to better control energy costs.

MESSAGE FROM THE CHAIR

MARYLAND
CLEAN ENERGY CENTER

October 1, 2016

Ladies & Gentlemen:

As Chairman of the MCEC Board of Directors over the past few years, I have had the opportunity to witness firsthand the remarkable evolution of the clean energy sector in Maryland. Our great state currently ranks as a leader in adopting policy that facilitates adoption of related renewable energy technologies and sustainability measures, which ultimately resulted in measurable job creation.

The Board and staff of the Maryland Clean Energy Center can and should take credit for their roles in facilitating this success, and I am proud to have been involved.

My hope is that Maryland will continue to retain our leadership position in fostering the advanced energy economy because of the associated cost saving and environmental benefits to our citizens. This will take continued investment of both public and private resources.

As a result of the Green Bank Study process MCEC led during my term as Board Chairman, we reported an $83M investment is necessary for Maryland to reach the RPS and other energy efficiency goals set by policy makers. We know that this investment cannot be met in a timely manner with public funds alone. Consequently, MCEC proposed and acted to enhance the green bank offerings it has and could provide.

During FY'16 MCEC focused on designing and implementing strategies to provide access to capital for energy projects, and ways to leverage a small public investment to attract a greater share of private dollars into the market place. The MD-PACE Program was launched to help commercial property owners fund energy improvements, and with technical support provided though the Maryland SAVES initiative enables easier access to lowest cost capital using Qualified Energy Conservation Bonds.

I am proud of what MCEC has been able to accomplish, even with a minimal commitment of funds to achieve its mission. With the right investment, I believe this instrumentality can and should continue to provide a valuable role in helping reduce energy costs for consumers and developing the clean tech sector for the state.

Sincerely,

George E. Ashton, III
Chairman of the Board
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INTRODUCTION: Role of MCEC in Market Sector Development

MCEC is a not-for-profit entity with the mission to transform the energy economy in Maryland by promoting clean energy, economic development, energy innovation and jobs in the State. MCEC operates under the following directives within its enabling statute:

- **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**
- **Collect, Analyze and Disseminate Industry Data**
- **Provide Outreach & Technical Support to Further the CE Industry in the State**

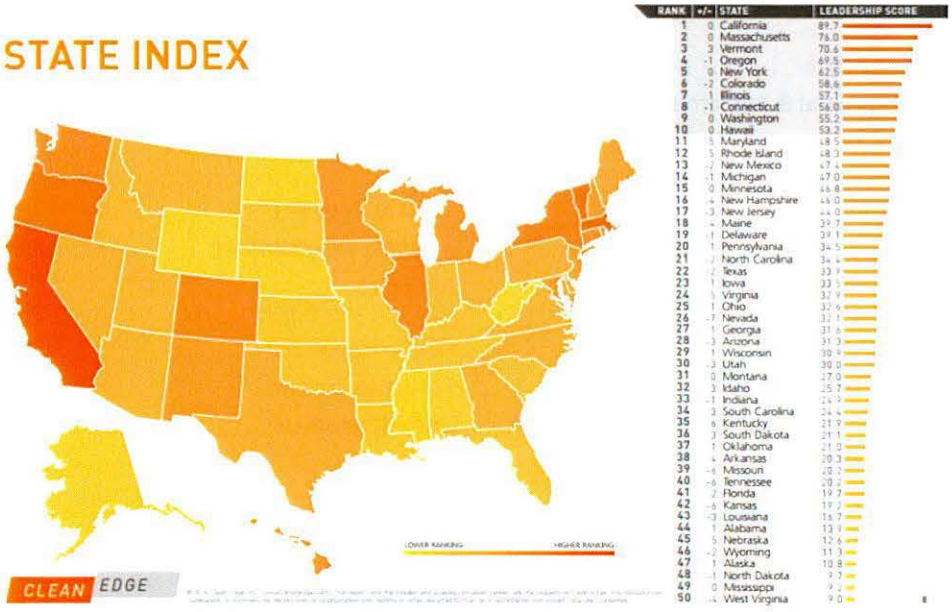
Since establishment in 2008, MCEC has played an instrumental role in helping develop the clean energy industry sector in Maryland through outreach and education; facilitating business partnerships; providing access to capital and financing; and by working with policy makers on the Federal, state and local levels. As a result of this targeted economic development effort, Maryland has become a national leader in the clean technology and clean energy marketplace. MCEC finds that the State is benefitting from a measured increase in jobs and wages associated with the growth of this sector.

Maryland Ranked 11th Nationally in Overall Leadership for Development of Clean Energy

The *"2016 US Clean Tech Leadership Index Report"*[1]; which annually tracks and ranks the clean-tech activities of all 50 states and the 50 largest metro areas in the U.S. – from electric vehicles (EV) and renewables adoption to policy and investment activity. This report shows the State of Maryland has moved up in the overall ranking of the top 20 states that are active in clean energy market and technology development. Released in May 2016 by Clean Edge, Inc.; the index takes policy, technology and capital investment into consideration and found Maryland to have improved to 11th overall, up from the position of 16th held in 2015.

As a state, Maryland maintained a top ten position of 9th in the Policy category because of proactive mandates and regulatory efforts policymakers have initiated to drive the market for adoption of clean energy products, services and technologies. The state moved up to 23rd place, from 25th in 2015 for Overall Investment of Capital, measured in clean-tech investment activity-as well as gauging human and intellectual capital and patent activity, along with the presence of top-rated educational and research institutions and industry incubators.

In the category of Technology, Maryland moved up three places in ranking, from 18th in 2015 to 15th in 2016. This index looks at the progress of states' deployment of clean electricity including renewable energy generation, energy storage, and fuel cell deployment as well as the use of advanced transportation like electric vehicles, hybrids, plug-in hybrids, biofuels, natural gas vehicles, and charging/fueling



RANK	+/-	STATE	LEADERSHIP SCORE
1	0	California	89.7
2	0	Massachusetts	76.0
3	3	Vermont	70.6
4	-1	Oregon	69.5
5	0	New York	62.5
6	-2	Colorado	58.6
7	1	Illinois	57.1
8	-1	Connecticut	56.0
9	0	Washington	55.2
10	0	Hawaii	53.2
11	5	Maryland	48.5
12	5	Rhode Island	48.3
13	-2	New Mexico	47.4
14	-1	Michigan	47.0
15	0	Minnesota	46.8
16	-4	New Hampshire	46.0
17	-3	New Jersey	44.0
18	-4	Maine	39.7
19	1	Delaware	39.1
20	1	Pennsylvania	34.5
21	-2	North Carolina	34.4
22	-2	Texas	33.9
23	1	Iowa	33.5
24	5	Virginia	32.9
25	1	Ohio	32.6
26	-7	Nevada	32.1
27	1	Georgia	31.6
28	-3	Arizona	31.3
29	1	Wisconsin	30.9
30	-3	Utah	30.0
31	0	Montana	27.0
32	3	Idaho	25.7
33	-1	Indiana	24.9
34	3	South Carolina	24.4
35	6	Kentucky	21.9
36	3	South Dakota	21.1
37	1	Oklahoma	21.0
38	-4	Arkansas	20.3
39	-6	Missouri	20.2
40	-6	Tennessee	20.2
41	-2	Florida	19.7
42	-6	Kansas	19.2
43	-3	Louisiana	16.7
44	1	Alabama	13.9
45	5	Nebraska	12.6
46	-2	Wyoming	11.3
47	1	Alaska	10.8
48	-1	North Dakota	9.7
49	0	Mississippi	9.2
50	-4	West Virginia	9.0

infrastructure. Finally, the report includes the deployment of energy intelligence through green building projects, smart grid deployment, grid modernization, and efficient energy use. The three subcategories are weighted equally.

The report also examines the metrics by metropolitan statistical area (MSA) and evaluated both the Washington, DC and Baltimore MSAs with overall improved rankings from the previous year in the Metro Index. Washington, DC MSA maintained a spot at 5th place and continued to hold the #1 spot in the rankings relative to green building inventory, calculated by the number of projects and square feet per capita. The Baltimore MSA rose 4 places in the rankings, from the position held by the region in 2015, to an overall position of 22nd among the 50 MSAs considered.

Job Growth Evidenced

MCEC documents overall job and wage growth evident since 2013 in the energy sector for Maryland. In Q1 2013, NAICS data for the energy sector in Maryland indicated total employment of 105,605 jobs which generated over $8,067,181,424 in total annual earnings. Comparison of Q1 2013 to Q2 2015 data, an increase is seen with 396 additional establishments reporting a remarkable growth of 17,771 jobs and over $438,000 in increased annual earnings. ***See Appendix I & II.***

Evolving Industry Sector

As technology advancements have driven down the cost demand the deployment of energy technologies has increased dramatically. As prices move ever closer to grid parity, renewable energy generation solutions are being deployed to a greater scale. From residential Nest™ thermostats, to load shedding and demand management solutions provided at commercial scale, services enabling consumers to control energy demand and usage at critical peak times are commonly found in households and businesses.

The renewable portfolio standard (RPS), as part of the suite of Maryland energy-environment related goals, has been modified several times by policy makers over the years in response to market conditions. The current RPS, with a 2% demand "carve-out" to drive solar project development, has been very successful. So much so that in FY'16, the pipeline of utility and commercial scale projects under development began to saturate or oversupply the market. Consequently, the value of Maryland Solar Renewable Energy Credits (SREC) from 2015 to 2016 dropped from $ 165 to $20, which resulted in a negative impact for profitability and a drastic drop in the number of projects subsequently entering the pipeline. Policy proposed for adoption in 2016 called for an increase in the RPS to help mitigate these circumstances, and was passed by the General Assembly with a majority vote. However, the bill was vetoed by Governor Hogan, stating objection to the incentive characterized as a "tax on ratepayers". This issue is likely to be revisited as the Assembly reconvenes in 2017.

Redox fuel cells are among the variety of energy storage technologies evolving from research undertaken at the University of Maryland Energy Research Center in College Park,

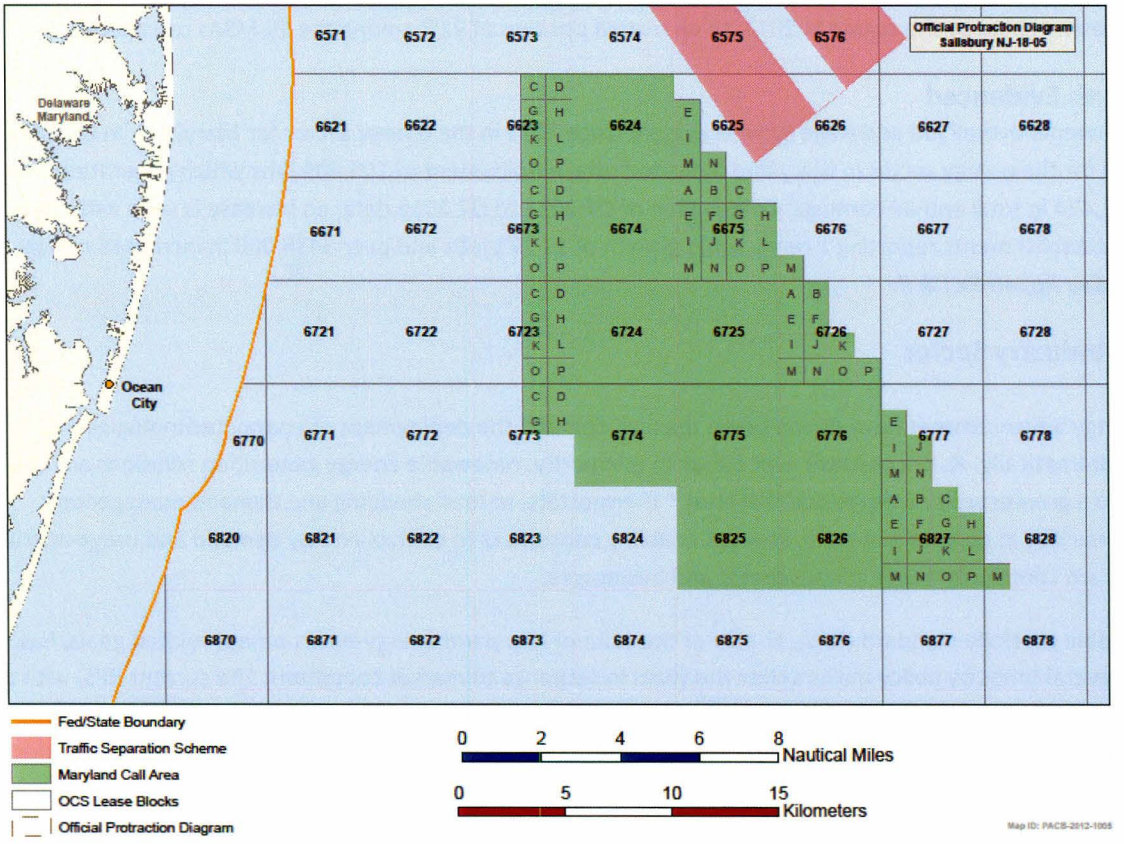
Grid reliability and resiliency have now become a priority in order to insure public safety, and uninterrupted business operation down time. Policies and incentives to enable deployment of battery backup, fuel cell and energy storage capabilities has become a priority consideration for policy makers and regulators in states including Maryland. The evolution of the traditional utility business model as it relates to the cost of infrastructure and transmission is also a consideration in this construct. Tesla is now marketing a fuel cell for residential applications.

While a glut of oil in the marketplace kept transportation fuel prices low throughout FY'16, vehicle registrations recorded in Maryland during the period indicate consumers are increasingly purchasing and driving electric vehicles,

built by both US and international automobile manufacturers.

Offshore wind energy generation is moving closer to reality as a source of power for consumers along the east coast of the US, with projects slated for construction in New England states. US Wind has obtained the rights to leases off of the Maryland coastline and is proceeding with project development at this time.

BOEM Maryland Call for Information and Nominations Area



http://www.boem.gov/uploadedFiles/BOEM/Renewable_Energy_Program/State_Activities/MD%20Call%20Map%20Without%20NOAA%20chart.pdf

GENERAL OPERATIONS OVERVIEW

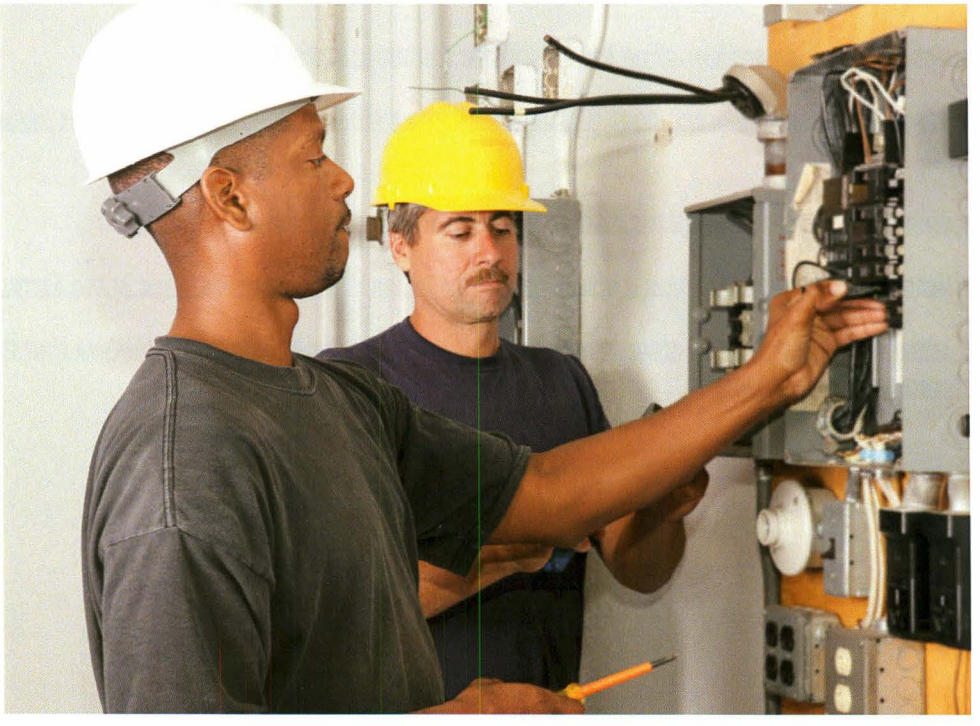
The MCEC FY'16 budget included $765,504 in total operating expenses with total revenue amounting to $286,216 During FY '16 MCEC funded operations in part with cash and cash equivalents from FY'15. Total income for this period is characterized primarily by grant revenue from the Maryland Energy Administration. Grant revenue for FY'16 totaled $213,126.

The projected FY'17 budget indicates the majority of MCEC income will be from grant revenue anticipated from the Maryland Energy Administration totaling approximately $410,000 for the fiscal year. The final installment of this grant is currently scheduled to be disbursed in January of 2017. MCEC's operating expenses are budgeted at $571,384 for FY'17, with the largest expenses assumed as payroll, rent, legal and accounting fees.

During FY'16, MCEC maintained staffing at or below FY'15 levels, within limits of available funding resources. The Board directed staff to focus efforts on project financing and deal flow with potential to provide revenue to sustain operations. Staff with appropriate expertise in public project financing was employed, and efforts toward outreach and education were minimized. The annual Maryland Clean Energy Summit, hosted over the past 5 years by MCEC was among the related activities cancelled or curtailed due to the uncertainty of funding for operations, which was a continued concern through the final months of the fiscal year.

Throughout FY '16 MCEC worked to secure a sustainable source of operating capital as a foundation upon which to enhance programs to facilitate access to capital for investment in clean energy and energy efficiency projects. Targeted audiences for MCEC programs include residential, commercial, and municipal and institution consumers, with new interest in developing partnerships and best practices to serve low-to-moderate income (LMI) residential needs.

Looking forward, the future of MCEC currently remains somewhat uncertain. Lack of a consistent or sustainable source of operating capital prohibits the ability of MCEC to retain qualified staff and manage financing programs. Recommendations anticipated from the Task Force study directed as a result of SB 726[3] will no doubt influence the future of funding and support for MCEC to continue in efforts to deliver the vision set for the at the time of its creation in 2008.



FACILITATING ACCESS to CAPITAL

Green Bank Study & Forum

Senate Bill 985[4], passed in the 2013 General Assembly session, directed MCEC to "conduct a study of green banks and clean bank financing initiatives, including aspects of implementation and funding".

Language from the bill directed MCEC to work in collaboration with the Maryland Energy Administration and the Coalition for Green Capital, a private not-for profit organization—as well as utilities, industry representatives and financial organizations. The study charge was as follows:

(1) review the structure and organization of green banks and clean bank financing initiatives established in other states;

(2) examine the method of capitalization of established green banks and clean bank financing initiatives;

(3) examine the sources, type, and amount of private capital leveraged or invested in connection with the establishment of a green bank or clean bank financing initiative;

(4) review the financial services provided by existing green banks and clean bank financing initiatives;

(5) review the need to provide low cost financing to clean energy and energy efficiency projects, the need to warehouse and securitize clean energy and renewable energy and energy efficiency financial instruments, and any other gaps in the availability of financing for clean energy and energy efficiency projects in the State;

(6) review the impact of existing Maryland financial programs on the renewable and energy conservation industries; and

(7) consider any other relevant information that the Center or Administration determines appropriate.

Based upon its analysis in conducting the study, the Center, in collaboration with the Administration, shall make recommendations as to:

(1) the need for a green bank or clean bank financing initiative in the State;

(2) the scope of a proposed green bank or clean bank financing initiative, including target industries and financing capabilities;

(3) the possible sources of capital for a green bank or clean bank financing initiative;

(4) the best method for establishing a green bank or clean bank financing initiative in the State; and

(5) any other relevant aspect relating to green banks and clean bank financing initiatives that the Center or Administration determines appropriate.

Over a 2-year process, with funding from the Town Creek Foundation to complete the task, an interim analysis report was issued in December of 2014[5] and a final report was published with recommendations in December of 2015[6]. Recommendations called for an investment of $30M in funds from a surplus of Regional Greenhouse Gas Initiative (RGGI) funds. These funds were found to be available during the study process to be used in leveraging greater amounts of private sector capital to fund energy measures, and to continue to address particular funding gaps for certain underserved audiences identified in the marketplace. Gaps are specifically associated with low-to-moderate residential, small business and commercial, and municipal consumers in addition to general support for entrepreneurial activity in the clean tech space. MCEC envisions expanding its current role as green bank leveraging funds at a 16 to 1 ratio to increase the overall investment in energy efficiency and generation improvements throughout Maryland.

Following the release of the report MCEC hosted a Green Bank Forum event in Annapolis on December 8, 2015.

The event was well attended by industry leaders and stakeholders as well as policy makers from across the State. A broad coalition of participants expressed support for green bank development and the proposed investment.

During the General Assembly session, Senate Bill 726 called for dedicated funding to facilitate the expansion of green bank financing programs and investments in Maryland. Although testimony was offered in support of the bill, the Department of Budget & Management and the Maryland Energy Administration filed in opposition to the proposed bill. The bill with certain amendments was eventually passed, and signed by Governor Hogan, calling for a Task Force to address the following:

(1) assess the programs currently provided by the Center and the programs that, within its mission, charge, and structure, may be provided by the Center, including the establishment of a green bank;

(2) review existing State financing instrumentalities that may have similar financing capabilities for purposes of determining whether there are advantages to the Center to coordinate or partner with those State financing instrumentalities on financing programs;

(3) identify the availability of resource capacity in State financing instrumentalities for purposes of determining whether there are cost–effective opportunities for the Center to share resources with those State financing instrumentalities on financing programs;

(4) review other cost–effective opportunities, including having the Center co–locate with another State financing instrumentality or State agency, that may assist the Center during the time when the Center is working toward becoming self–sustaining;

(5) determine whether the outstanding balance of loans initiated in fiscal year 2009 from the Maryland Energy Administration should be converted to a grant and considered as start–up funds as a way in assisting the Center to become self–sustaining;
(6) determine an appropriate amount of State annual grant funding that the Center should receive for operating and program assistance as the Center works toward becoming self–sustaining and in no further need of operating and program support from the Maryland Strategic Energy Investment Fund or any other State money; and

(7) consider any other related matter that the Task Force determines appropriate.

MDPACE Launched/ October 2015

Property Assessed Clean Energy (PACE) lending models have been successfully implemented in other states to help commercial property owners finance energy improvements in an advantageous way and with the most immediate return on investment. As an economic development tool for counties across Maryland, PACE allows building owners to finance qualifying energy efficiency and clean energy improvements through a voluntary assessment on their property tax bill. Property owners pay for the improvements over time through this additional charge on their property tax bill, and the repayment obligation transfers automatically to the next owner if the property is sold. The property lien mitigates risk for lenders and allows longer terms for loans, tied to the useful life of the improvements.

Capital provided under PACE is secured by a lien on the property, so low-interest capital can be raised from the private sector. Energy upgrades create a more competitive environment for attracting and retaining businesses through lower energy costs. Furthermore, energy upgrades create new jobs while reducing greenhouse gases and other pollutants. Based on aggregated data from the CoStar database on core real estate sectors for PACE, there were roughly 62,500 eligible buildings. Based on research conducted by ACEEE of other state and utility administered commercial energy efficiency programs as well as the experience of a similar PACE model program implemented in Connecticut. MCEC estimates over $44M in potential related building improvements could be made in Maryland using PACE financing.

Legislation enabling the adoption of PACE lending statewide passed in 2014. Since property taxes are collected at the county and city level, the law requires that local ordinance also be passed in order to take advantage of PACE financing. MCEC led efforts to facilitate local ordinance passage and program administration across Maryland and worked to implement a program allowing counties in to join a statewide, standard PACE program.

As of July 30, 2016:

- 5 Counties passed local enabling ordinance
- 4 enrolled in MDPACE for administration
- 3 proposed ordinance in process for adoption
- 7 actively considering
- 23 contractors enrolled
- 5 capital providers enrolled

In October of 2015, utilizing an equity partnership with Pace Financial Servicing, LLC; MCEC launched MD-PACE as an open platform with central administration. This program model allows multiple types of property owners to work with approved contractors and capital providers to more easily implement energy cost saving measures.

PACE Financial Servicing, LLC (PFS) administers PACE programs, combining an unprecedented track record in commercial PACE administration with extensive expertise in tax lien finance. PFS designed the guidelines for the MD-PACE program in Maryland and serves to:

- respond to inquiries about PACE financing
- approve PACE applications based on statute and ordinance
- support building owners, contractors, and PACE lenders to build a robust PACE market throughout Maryland
- support the County Tax Collector in onboarding PACE assessments and monitoring collection.
- ensure accurate payment allocation for project stakeholders.

MARYLAND HOME ENERGY LOAN PROGRAM
advancing energy efficiency

MHELP Status: Program Continues, Future for Continuation Unclear

Program Summary:

Over six 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 program came from a U.S. Department of Energy grant to MEA. Since 2011, lending has been administered and funding 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.

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 allows for a same as cash 0% payable in 120 days financing option.

Cumulative Program Results (6/30/16):

- 3,455 loans
- $26 million in leveraged financing
- 52 direct loans
- $412,956 in direct lending
- Approx. 11.8 million KWH energy savings
- 53,700 FTE Contractor Job Hours

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, 2016 the MHELP program has recorded a total of only 16 defaults valued at approximately $102,000.

Remaining MHELP Program Capital: At the time of this report, the Loan Loss Reserve fund balance is $8,627.76. There are no funds remaining in the Interest Rate Subsidy fund.

Future Program Investment: In setting the FY'17 budget, the MCEC Board approved a $200,000 programmatic investment for the continuation of the MHELP program. The board also approved a $50,000 personnel expense in FY 2017 for the development of a comprehensive market study and implementation plans for a future program offering. However, funds appropriated to MCEC have not yet been released for this investment.

MARYLAND CLEAN ENERGY CAPITAL
providing financial solutions

MCAP Status: Program Summary, Revenue and Outlook

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 statue to be an issuer of tax-exempt debt for projects that support the advancement of clean energy, economic development, energy innovation and related jobs creation in the State.

Cumulative MCAP bond issuance through the period ending June 30, 2016 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, 2016 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, 2106 are approximately $80,252.** 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. **FY 2016 administrative and performance related fees earned are approximately $41,434.**

MCAP Outlook and Marketplace Assessment: Much of the value of MCAP resides in MCEC's the ability to issue low cost tax-exempt debt and/or provide ownership of project assets and debt. The historically low interest rate environment and the compression of spreads between tax-exempt and taxable interest rates has made it increasingly challenging for MCAP to serve small and mid-sized projects. The economic value of the interest rate differential between tax-exempt and taxable rates for smaller projects is not enough to justify the increased financing complexity, increased cost of issuance and ongoing IRS compliance that are part of any tax-exempt bond issuance.

MCAP once sought to serve projects sized at $2,000,000 and above; however the minimum project size likely to find value through a conduit tax-exempt financing is currently three to five times greater than MCEC's original projections. While interest rates and spreads inherently change, MCAP is repositioning itself in the near term to focus on larger projects. These larger projects have longer development cycles but MCEC has several promising projects in the pipeline.

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.

MARYLAND SAVES™

Sustainable and Verifiable Energy Savings

MarylandSAVES™ Green Community Program Developed

The MarylandSAVES™ Green Community Program (www.MDSAVESGCP.com) was developed in FY'16 to offer subsidized financing to Maryland local government, institutional, commercial, and industrial properties for qualified energy and water conservation measures, including energy efficiency (lighting, HVAC, controls, envelope, process improvement upgrades), renewable energy projects, and alternative fueling vehicles and infrastructure.

A subsidized interest rate is enabled through the use of Qualified Energy Conservation Bonds (QECBs) allocated by local governments within Maryland and issued on a conduit basis through the Maryland Clean Energy Center for private and local government borrowers. The Program is administered through a partnership agreement with CleanSource Capital, LLC.

QECBs used through the Program offer a direct pay credit subsidy from the U.S. Treasury that have historically been approximately 3.0%, and can be used in financings with terms up to 30 years. The savings on interest over the term of a financing can be significant and thus allow a project to afford a greater scope of work and cost than otherwise with conventional taxable or tax-exempt financing.

Working with the smaller allocations remaining at the local government level in Maryland as it has in other states, through the SAVES Green Community Program platform, the program streamlines and standardizes the process for using QECBs to fund qualifying projects. MCEC serves as the conduit using standardized documentation to issue the QECBs on a private placement basis to qualified financial institutions to fund the qualifying projects. The QECBs are issued on a project-by-project basis so that each project is underwritten and approved at time of funding by the third-party lender and is not dependent on a County's or the State of Maryland's credit.

STEPS to USE QECBs through MarylandSAVES

Step 1- The Borrower submits a Project Summary Worksheet and supporting documentation (Energy Assessment or feasibility study), defining the proposed project, measures, and estimated energy savings, which is reviewed under a "reasonableness" standard to ensure that the project and measures meet the Program technical guidelines for eligibility.

Step 2- Upon verification that the project qualifies, the Borrower then submits a formal Application Package for approval for subsidized funding through the Program and through the Maryland Clean Energy Center ("MCEC") as the conduit for issuing the QECBs. The application fee to the MCEC is $5,000. Upon approval, the Borrower enters into a term sheet with the Program for funding using the QECBs.

Step 3- A third-party financing source separately underwrites the project and issues a term sheet for funding through the Program. Upon closing, a Program Fee of 2% and issuance costs of up to 2% are paid from loan proceeds.

Step 4- The Borrower ensures compliance with Davis Bacon Act wage requirements during implementation and the Administrator services the QECBs after closing for the interest rate subsidy to be paid directly to the Borrower for the life of the loan.

CleanSource Capital, LLC. serves as program administrator to remove the administrative burden for a borrower to structure and manage the issuance the QECBs, as well as providing post financial close servicing of the QECBs and the federal cash subsidy payments made by the US Treasury which offsets the taxable interest rate of the lending institution.

Funding can be made in the form of amortizing senior debt, C-PACE, or leases with durations of up to 10 years or longer (up to 30+ years currently) for energy service performance contracting with qualified contractors. The Program targets funding project sizes of approximately $2 million up to $5 million, with a minimum of $1 million and a maximum at the Program's discretion.

Significant economic and environmental benefits may be expected from implementation of this program, including:

Economic Benefits:

- Scalable, economical financing program for efficient deployment of state level QECBS
- Reducing business operating expenses through energy savings to maintain competitiveness.
- Job creation through capital investing – 20 direct jobs per $1MM invested – and through energy savings – 17 indirect jobs per $1MM saved.
- Facilitate deployment of un-used QECBs across the state.

Environmental Benefits:

- Estimated energy savings of 1,500 MWh's per $1MM invested.
- Estimated reduction in GHG emissions of 1,000 MT's per $1MM invested.

LMI INITIATIVE

Certain gaps in available financing were identified in the Green Bank Study previously mentioned, among those, project financing for desirable energy improvement measures for low to moderate income homeowners. Throughout FY'16 MCEC has been part of various discussion and stakeholder workgroups looking to address this need.

Following the uprising in Baltimore that was catalyzed after the arrest and death of Freddie Gray, Congressman John Sarbanes (MD-3) led a specific initiative designed to address this particular market gap. He aimed to provide job-training opportunities in energy sector, which has been viewed as critical to Baltimore for long-term recovery. In April 2016, MCEC entered into a partnership with the US Department of Energy and City of Baltimore though a formal MOU to assist with the effort. **See Appendix III.**

MCEC views this initiative as a pathway to build financing models practices that can be replicated across the state in the future to address the gap in financing energy cost saving solutions for low to moderate income consumers.

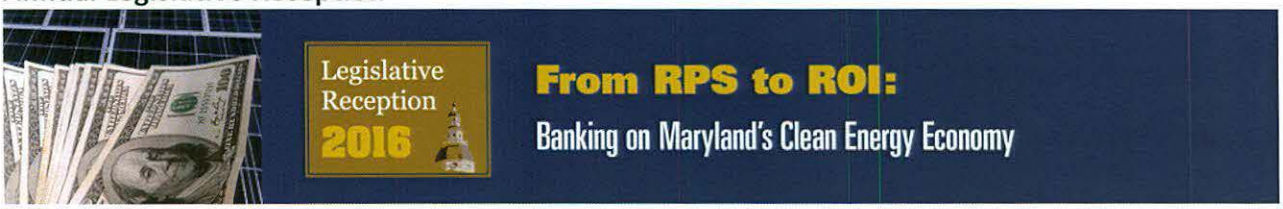
RESIDENTIAL PACE LENDING STUDY

During the 2016 session the Maryland General Assembly passed HB387[7], *"...requiring the Maryland Clean Energy Center to conduct a study to determine certain design and implementation strategies for a residential clean energy loan program; requiring the study to include consideration of certain matters; requiring the Center to consult with certain persons in conducting the study; requiring the Center to report certain findings and recommendations to the General Assembly..."*

Governor Hogan subsequently signed the bill into law, and in June 2016 MCEC began the work through a series of meetings coordinated with the stakeholder work group identified in the bill language. The study report is due on December 1, 2016.

ADVOCACY

Annual Legislative Reception



As it has annually for the past 5 years, MCEC hosted a Legislative Reception for stakeholders to gain access to policymakers, and become acquainted with the energy and environmental policy under consideration by legislators during the 2016 session. MCEC convenes a Legislative Committee to review pending bills on a weekly basis and offers informational testimony as deemed necessary by the committee. The event was attended by over 225 registered participants and legislators.

Maryland Clean Energy Center
STATEMENT OF NET POSITION
June 30, 2016 and 2015

ASSETS

	2016	2015
Cash and cash equivalents	$ 7,370	$ 513,896
Restricted cash	8,628	213,535
Accounts receivable	35,397	25,818
Prepaid expenses and deposits	3,597	1,667
Property and equipment, net of accumulated depreciation (Note 3)	10,002,947	10,600,020
Total assets	$ 10,057,939	$ 11,354,936

LIABILITIES AND NET ASSETS

Accounts payable	$ 1,404	$ 45,100
Accrued salaries and benefits	8,773	18,414
Note payable - due in one year (Note 4)	50,000	50,000
Bonds payable - due in one year (Note 5)	898,478	859,968
Note payable - due in more than one year (Note 4)	1,200,000	1,200,000
Bonds payable - due in more than one year (Note 5)	9,251,762	10,138,305
Total liabilities	11,410,417	12,311,787
Restricted	8,628	399,771
Unrestricted, as restated	(1,361,106)	(1,356,622)
Total net assets	(1,352,478)	(956,851)
Total liabilities and net assets	$ 10,057,939	$ 11,354,936

Maryland Clean Energy Center
STATEMENT OF REVENUES, EXPENSES
AND CHANGES IN NET POSITION ASSETS
for the Years Ended June 30, 2016 and 2015

	2016	2015
OPERATING REVENUES		
Grants	$ 213,126	$ 275,000
Energy savings revenue	33,434	25,818
Sponsorships	25,580	170,427
Bond administration revenue	14,000	6,000
Miscellaneous	76	-
Interest income	-	1,000
Donations and contributions	-	650
Total operating revenues	286,216	478,895
OPERATING EXPENSES		
Salaries	397,646	374,861
Purchase of service	132,500	89,764
Fringe benefits	93,475	95,417
Professional fees	38,836	57,697
Office expenses	27,671	40,115
Rent	22,050	21,000
Miscellaneous	11,855	19,832
Advertising	11,838	40,629
Information and technology	10,159	28,943
Conferences and meetings	5,951	65,563
Consultants	4,977	4,170
Telephone	4,209	4,551
Travel	3,497	4,549
Printing and publications	3,024	773
Dues and subscriptions	816	855
Total operating expenses	768,504	848,719
Operating loss before depreciation	(482,288)	(369,824)
Depreciation and amortization	597,073	353,045
Operating loss before non-operating income and (expenses)	(1,079,361)	(722,869)
NON-OPERATING INCOME AND (EXPENSES)		
Energy savings revenue restricted for debt service	1,195,683	1,123,957
Other investment income	76	63
Bond issuance costs	-	(228,491)
Loan loss reserve payments	(46,549)	(24,886)
Interest rate subsidy	(117,826)	(249,444)
Interest expense	(347,650)	(531,588)
Total non-operating income	683,734	89,611
NET ASSETS		
Change in net assets	(395,627)	(633,258)
TOTAL NET ASSETS, BEGINNING OF YEAR, as restated	(956,851)	(323,593)
TOTAL NET ASSETS, END OF YEAR, as restated	$ (1,352,478)	$ (956,851)

Maryland Clean Energy Center
STATEMENT OF CASH FLOWS
Years Ended June 30, 2016 and 2015

	2016	2015
CASH FLOWS FROM OPERATING ACTIVITIES:		
Cash received from providing services	$ 276,637	$ 463,869
Cash paid to suppliers	(323,569)	(470,299)
Cash paid to employees	(500,202)	(483,301)
Net cash used by operating activities	(547,134)	(489,731)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchase of capital assets, net of borrowings	-	(2,505,010)
Purchase of defaulted loans	(46,549)	(24,886)
Investment income	76	63
Net cash used by investing activities	(46,473)	(2,529,833)
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:		
Bond issuance costs	-	(228,491)
Interest rate subsidy payments	(117,826)	(249,444)
Energy savings revenue restricted for debt service payments	1,195,683	1,123,957
Interest paid on bonds	(347,650)	(531,588)
Proceeds from notes payable	-	900,000
Principal payments on bond payable	(848,033)	(592,369)
Net cash provided (used) by capital and related financing activities	(117,826)	422,065
Net change in cash and cash equivalents	(711,433)	(2,597,499)
Cash and cash equivalents, beginning of year	727,431	3,324,930
Cash and cash equivalents, end of year	$ 15,998	$ 727,431
RECONCILIATION OF OPERATING INCOME TO NET CASH PROVIDED BY OPERATING ACTIVITIES:		
Operating loss	$ (1,079,361)	$ (722,869)
Adjustments to reconcile income from operations to net cash provided by operating activities:		
Depreciation & amortization	597,073	353,045
(Increase) decrease in assets:		
Accounts receivable	(9,579)	(15,026)
Prepaid expenses and deposits	(1,930)	-
Increase (decrease) in liabilities:		
Accounts payable	(43,696)	(90,765)
Accrued salaries and benefits	(9,641)	(14,116)
Net cash used by operating activities	$ (547,134)	$ (489,731)

End Notes

1 2016 US Clean Tech Leadership Index
http://www.eenews.net/assets/2016/05/16/document_gw_05.pdf

2 Senate Bill 726
http://mgaleg.maryland.gov/2016RS/bills/sb/sb0726e.pdf

3 Senate Bill 985
http://mgaleg.maryland.gov/2016RS/bills/sb/sb0985f.pdf

4 Interim Green Bank Study Report
http://mdcleanenergy.org/sites/default/files/Green%20Bank%20Preliminary%20Report%2011_14_2014%20Draft.pdf

5 Final Green Bank Study Report
http://mdcleanenergy.org/sites/default/files/Report%20-%20Draft%20FINAL%203%20PM%2011.30.pdf

6 House Bill 387
http://mgaleg.maryland.gov/2016RS/chapters_noln/Ch_593_hb0387T.pdf

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 3241 Petroleum and coal products manufacturing *	52	799	800	810	$16,051,194	$1,538
NAICS 32419 Other petroleum and coal products mfg.	4	76	71	70	$1,943,493	$2,067
NAICS 3334 HVAC and commercial refrigeration equipment *	36	1,248	1,259	1,258	$17,422,138	$1,068
NAICS 3353 Electrical equipment manufacturing *	21	934	929	926	$13,596,825	$1,125
NAICS 3359 Other electrical equipment and component mfg. *	43	548	518	527	$10,794,389	$1,564
NAICS 333613 Wind power transmission equipment mfg.	4	57	57	56	$955,336	$1,297
NAICS 334515 Electricity and signal testing instruments	19	974	988	949	$34,206,193	$2,712
NAICS 335929 Other communication and energy wire mfg.	3	97	77	76	$806,305	$744
NAICS 42361 Elec. equip. and wiring merchant wholesalers	208	2,380	2,377	2,374	$49,921,722	$1,616
NAICS 42369 Other electronic parts merchant wholesalers	264	3,108	3,109	3,109	$77,139,815	$1,909
NAICS 42373 HVAC equip. merchant wholesalers	132	1,498	1,478	1,479	$27,956,983	$1,448
NAICS 42471 Petroleum bulk stations and terminals	19	262	260	266	$5,526,874	$1,619
NAICS 42472 Other petroleum merchant wholesalers	64	696	700	707	$11,131,484	$1,221
NAICS 48621 Pipeline transportation of natural gas *	5	64	63	61	$1,524,931	$1,872
NAICS 541350 Building inspection services	150	473	485	482	$5,507,448	$883
NAICS 541690 Energy consulting services	579	3,906	3,874	3,879	$89,063,923	$1,763
NAICS 624229 Energy Assistance Programss	72	561	564	574	$5,926,687	$805
NAICS 813312 Energy and conservation organizations	161	1,485	1,513	1,514	$16,534,534	$846
NAICS 813319 Other Energy advocacy organizations	224	1,572	1,597	1,622	$19,972,888	$962
Totals	**8411**	**105,061**	**105,405**	**105,605**	**$2,016,795,356**	

* Adjusted to Eliminate Duplication

Estimated Total Annual Earnings	**$8,067,181,424**
Average Weekly Earning	**$1,523**

Source: Quarterly Census of Employment and Wages (QCEW), 1st Quarter 2013
http://www.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables

Compiled by: Andy Moser, former MD Assistant Secretary of Labor

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 Programss	76	620	621	618	$6,331,389	$786
NAICS 813312 Enviroment 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
Totals	**8807**	**120,623**	**121,686**	**123,376**	**$2,126,367,598**	

* 6 digit NAICS Unavailable

Source: QCEW, 2nd Quarter 2015

http://www.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables

Compiled by: Andy Moser, former MD Assistant Secretary of Labor

Estimated Total Annual Earnings	**$8,505,470,392**
Average Weekly Earning	**$1,129**

Department of Energy
Washington, DC 20585

MEMORANDUM OF UNDERSTANDING

Among the

U.S. DEPARTMENT OF ENERGY
ENERGY JOBS STRATEGY COUNCIL

and the

MAYOR AND CITY COUNCIL OF BALTIMORE

and the

MARYLAND CLEAN ENERGY CENTER

regarding

LOW INCOME SOLAR FINANCING AND RELATED JOBS CREATION IN BALTIMORE

This Memorandum of Understanding ("MOU") is entered into this ____ day of March, 2016, by and between the United States Department of Energy ("DOE") and the Mayor and City Council of Baltimore ("Baltimore") and the Maryland Clean Energy Center ("Center") (hereinafter "the Parties"). The Energy Jobs Strategy Council ("JSC") within the Office of the Secretary will serve as the office responsible for carrying out the goals of the MOU on behalf of DOE.

I. BACKGROUND:

The JSC's mission is to accelerate the growth of and access to jobs in all sectors of the United States energy economy while meeting the goals of the Administration's Climate Action Plan. The Council consists of members from twenty offices within the Department of Energy, including representation from the Department's National Laboratories. The Council also cross collaborates with interagency partnerships with the U.S. Departments of Labor, Education, Defense, Commerce, Agriculture, and Veterans Affairs.

Recent events have shown that there are many low income and underserved communities and individuals who lack awareness of and access to energy, manufacturing and STEM jobs and the training associated with these jobs. To ensure that the jobs being created in the energy, manufacturing and STEM sectors build stronger, more inclusive communities, the JSC serves as convener and coordinator between workforce development systems, including the non-profit sector, state, local and regional governments, industry, and the unemployed and disadvantaged communities.

II. PURPOSE:

The purpose of this MOU is to allow DOE, Baltimore, and the Maryland Clean Energy Center to work collaboratively to establish Baltimore as a Clean Energy Hub and forge a workforce and community investment partnership with all its attendant clean energy financing options, job creation, jobs skills training, utility costs savings, energy education and awareness, and reduction in environmental impacts benefits. The MOU will serve to position Baltimore as a demonstrated national and global leader in low income clean energy financing and workforce development. The outcomes of this MOU will help accelerate the adoption of energy efficiency and solar projects for low and moderate income home owners, business owners (small and large commercial/industrial), local government, non-profit, and faith-based institutions; make solar more accessible to historically underserved communities and prepare the workforce development system to respond to the demand of the solar and energy efficiency industries while creating a more diverse solar workforce, reducing environmental impacts and educating residents about the benefits of solar.

This MOU is intended to build a model of collaboration for communities seeking to establish clean energy financing and related workforce development opportunities for low income communities. DOE enters into this MOU under the authority of section 646 of the Department of Energy Organization Act (Pub. L. 95-91, as amended; 42 U.S.C. § 7256).

The MOU will be extended to Baltimore and its affiliated local government authorities and may include cooperative activities with partner organizations identified by Baltimore.

DOE, Baltimore and the Center intend to work together towards the following goals:

(a) Accelerate the growth of and access to solar and renewable energy jobs;
(b) Develop a blueprint for accelerating low-income solar and energy efficiency financing for Baltimore, which can be replicated in other U.S. cities;
(c) Develop coordinated solar and energy efficiency workforce training programs through collaboration with local colleges, universities, non-profit organizations and other interested stakeholders;
(d) Implement an energy literacy and energy education outreach and awareness campaign, with an emphasis on solar and energy efficiency for low income neighborhoods and individuals;
(e) Conduct economic analysis that presents cost/benefits of solar and energy efficiency solutions;
(f) Assist in the identification of technical assistance, technical advice, technical information, and funding opportunity announcements offered through DOE and federal agencies applicable to municipal and affiliated local government authorities in their municipal solar and renewable energy use, delivery, and energy efficiency efforts;
(g) Prepare a roadmap for rapid demonstration and deployment;
(h) Provide access to information and existing municipal tools and resources necessary to further the activities under this MOU;
(i) Assist in coordinating, promoting and supporting events and activities in furtherance of this initiative; and

(j) Identify other areas of cooperation from Baltimore and the Center with respect to clean energy.

Through the MOU, DOE, Baltimore and the Center agree to work together to advance each of these priorities and develop work plans to accomplish these goals. The blueprint referenced in paragraph II(b) above will be developed by the Parties and incorporated as addenda to this MOU. The final work product resulting from the work plans developed under this MOU will be made public.

III. ROLES OF THE PARTIES

The Parties hereby agree that they will undertake, subject to Section IV, and to the extent permitted by applicable law, the following activities under this MOU:

A. Parties Collectively.

The Parties will endeavor to:

1) Agree on near- and medium-term opportunities for collaboration to further the intended purposes of the MOU;
2) Act to realize the benefits of the opportunities identified in paragraph II;
3) Form a technical team to engage around developing the blueprint referenced in paragraph II(b) above, efforts to build a "Clean Energy HUB" in Baltimore and a related workforce and jobs skills community investment program;
4) Designate Points of Contacts ("POCs") for undertaking activities in concert and for consultation regarding activities relevant to the MOU undertaken individually;
5) Promote public awareness of the goals and benefits of this MOU.

B. WORKPLANS

Through this MOU, DOE, Baltimore and Center agree to work together to advance each of these priorities and develop work plans to accomplish these goals. Specific work plans for the initiatives described above will be developed by the Parties and incorporated as addenda under this MOU. The final work product resulting from the work plans developed under this MOU will be made public.

IV. TERMS AND TERMINATION.

This MOU shall remain in effect until terminated by written notices from all the parties. If one party elects to separate from the agreement by written notice to the other parties, the remaining parties may elect to continue the relationship established by this MOU.

This MOU in no way restricts any of the Parties from participating in any activity with other public or private agencies, organizations or individuals.

This MOU is neither a fiscal nor a funds obligation document. Nothing in this Agreement authorizes or is intended to obligate the Parties to expend, exchange, or reimburse funds, services, or supplies, or transfer or receive anything of value.

This MOU is strictly for internal management purposes for each of the Parties. It is not legally enforceable and shall not be construed to create any legal obligation on the part of either Party, including that of a federal contractor. This Agreement shall not be construed to provide a private right or cause of action for or by any person or entity.

This MOU is subject to, and will be carried out in compliance with, all applicable laws, regulations and other legal requirements.

V. MODIFICATIONS.

This MOU may be modified by mutually acceptable written amendment duly executed by authorized officials of DOE and Baltimore.

VI. ENTIRE AGREEMENT.

This MOU constitutes the full and final understanding of both Parties on all subjects contained within it. All prior negotiations, understandings, and agreements are merged into this Agreement.

VII. EXECUTION.

The Parties have caused this MOU to be executed in duplicate originals by their duly authorized representatives and is effective on the date of the last signature below.

For the U.S. Department of Energy

Ernest J. Moniz — April _____, 2016
Secretary

For the Mayor and City Council of Baltimore

Stephanie D Blake

Stephanie Rawlings-Blake — ~~April~~ May 6, 2016
Mayor

For the Maryland Clean Energy Center

Katherine Magruder

Katherine Magruder — ~~April~~ May 11, 2016

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CLEAN ENERGY CENTER

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