



EmPOWERing Maryland

Clean Energy Programs FY 2012

JULY 2011

Maryland Energy

ADMINISTRATION

Powering Maryland's Future



EXECUTIVE SUMMARY

The Maryland Energy Administration (MEA) mission is to promote affordable, reliable and clean energy using monies from the state Strategic Energy Investment Fund (SEIF). As part of Governor's O'Malley "Smart, Green and Growing" initiative, these programs will help reduce household bills, create new green collar jobs, address global climate change, and promote energy independence.

MEA relies on federal funds and the proceeds from the Regional Greenhouse Gas Initiative and does not receive any state general funds. The investments made by MEA and its partners this fiscal year (2012) will result in countless benefits for Marylanders, as summarized below:

| | |
|---|-----------------|
| Funds invested by MEA | \$14.38 million |
| Energy cost savings over life of investments | \$122 million |
| Green collar jobs created/retained | 321 jobs |
| CO2 emissions reduced | 37,616 tons |
| Cars off the road (in CO2 equivalent) | 7,064 cars |
| # of Maryland low-to-moderate income families benefitting from energy retrofits | 3,422 families |
| Renewable energy systems installed on homes | 2,900 systems |
| Annual energy saved | 58,296 MWh |
| Annual renewable energy produced | 23,320 MWh |
| Conventional gasoline displaced | 145,570 gallons |
| Leveraged Funds | \$124 million |

From fiscal year 2010 to 2011, the residential grant programs described in Section 2 alone contributed to an increase of installed renewable energy capacity by 326% for electricity, 212% for solar hot water, and 210% for geothermal.

MEA plans to continue its support of clean energy and energy efficiency through its programs as listed below. In light of the closure of federal American Recovery and Reinvestment Act (ARRA) funding, MEA expects a decline in funding dollars overall, but looks to leverage both the practical knowledge gained through 2011 funding levels and the market momentum gained to further increase energy efficiency and promote renewables throughout the state.

FOOTNOTE

This program book highlights all MEA programs for the current fiscal year and does not highlight separate administrative, EM&V, regulatory strategies, or other functions performed by MEA.

MEA EmPOWERing Maryland Clean Energy Programs FY12

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Goal 1 - Expand Energy Efficiency

A. Multi-Family Housing Retrofits for Low and Moderate Income Families

Budget: \$ 400,000 (SEIF) (includes \$200,000 for Technical support)
\$ 400,000 (Total)



Renovations at the Gilbert Highlands housing community in Montgomery County were funded in part through a grant from MEA's Multifamily Energy Efficiency and Housing Affordability (MEEHA) program.

A significant portion of low and moderate income families are renters, yet apartments and condominiums have not been included in the traditional weatherization programs. In coordination with the Department of Housing and Community Development (DHCD) and housing nonprofit organizations, MEA will provide energy efficiency retrofits in apartment units to reduce energy bills for low and moderate income families over the life of the program. Funding may be used for a limited number of renewable energy projects.

Beneficiaries

Residential customers in multi-family buildings who are responsible for their utility bill or properties that pay the utility bill for low and moderate income Maryland residents.

The Way it Works

The program focuses on apartment buildings undergoing significant rehabilitation efforts as well as properties needing energy efficiency upgrades. Some new construction projects may also be served. Recruitment of potential buildings is conducted through DHCD and other existing state and local affordable housing agencies, utilities, and building management associations. MEA leverages funds with DHCD to pay a portion of incremental cost for energy efficiency measures for new or rehabilitated multifamily buildings already undergoing DHCD rehabilitation. MEA pays up to \$2,500 per unit, with a cap of \$500,000 per project.

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FY 11 Accomplishments

Since the inception of the program, it has served 1,638 families at 17 properties to help them save a combined total of 10,245 MWh, or an annual saving of \$1,582,218. This equals 5,463 tons of CO2 reduction or taking 1,053 cars off the road. In addition, the program has provided energy audits conducted at 37 properties which serve 4,526 families. This final year will help close out a three year, \$9.7 million dollar program.

| Location | Multi-Family Projects |
|---------------|--|
| Western MD | William Booth Tower, C.W. Brooks, and Banneker Gardens |
| Eastern Shore | North Creek Run and Concord Apartments |
| Southern MD | Silverwood Farms |
| Central MD | Gilbert Highlands, Sierra Woods, City Arts, Perryman Station, Hammarlee House, Park View at Severna Park, Glenview Gardens, The Greens at Liberty Road, Wayland Village, Victory Tower, and Lafayette Apartments |

Return on Investment

The investment in this program will yield an estimated \$1,953,097 in annual direct energy savings to consumers during FY 12 through the retrofit of an estimated 3,422 units. Energy savings from this project will typically range from 15 to 25 percent per housing unit or complex. In addition to reducing monthly energy bills for thousands of families, this program would help create an estimated 75 energy rehabilitation jobs.

| Program Goal | Projected Results |
|---|-------------------------------|
| Annual reduction in energy consumption | 10,036 MWh equivalent* |
| Savings equivalent to the energy consumption of X number of MD homes per year | 809 homes |
| Annual savings | \$ 1,953,097 per year |
| Life Cycle savings | \$ 29,296,462 (over 15 years) |
| Carbon Dioxide Emissions Avoided | 6,956 tons |
| Equivalent to cars off the road | 1,340 cars |
| Participants | 3,422 units |
| Jobs Created/Retained | 75 |

*MWh estimated savings for Multifamily Program are calculated based on the energy savings from 46 former projects. These saving are based on professional energy assessment conducted at these properties which yield about 2 KWh of savings annually for each \$1 invested, or 30 KWh of savings over the 15-year life of the investments for each \$1 invested.

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B. Commercial and Industrial Programs

Budget: \$ 383,765 (ARRA - Save Energy Now)
\$ 150,000 (SEIF – technical services)
\$ 533,765 (Total)

[A portion of the \$2.5 million budget for revolving Lawton loan appropriations is available for C&I. See Part E: Jane E. Lawton Conservation Loan Program in this section of the document]

The Commercial and Industrial sector represents approximately 30% of electricity consumption in Maryland. MEA reaches out to this market sector by providing technical and financial assistance to help Maryland businesses and institutions implement energy efficiency upgrades and/or energy assessments.

Beneficiaries

Commercial and industrial consumers that undertake upgrades to improve energy efficiency.

The Way It Works

Save Energy Now for Maryland Industry: MEA has created the Save Energy Now program funded by DOE to improve the energy efficiency of industrial manufacturing facilities through waste heat recovery, combined heat and power, and other traditional energy efficiency improvements. The program leverages aspects of the federal Save Energy Now program along with expertise from the Maryland Technology Extension Service and SenTECH/Energetics to provide Maryland industries access to informational resources, workshops, technical support, trainings, and energy assessment opportunities.

Energy consultation, pilot program development and assessments: MEA provides energy assessments at a reduced cost as well as additional incentive money for qualified energy efficiency measures. MEA also coordinates pilot program development and consultation for recommending effective technologies through collaboration with utility companies and industry consultants.

Energy Efficiency Loan Fund: Using the existing Jane E. Lawton Conservation Loan Program regulations and structure, MEA offers a low interest rate revolving loan program to help finance the cost of energy efficiency projects in commercial and industrial facilities. By operating this program as a revolving loan fund, MEA ensures that financial assistance is available for commercial and industrial energy efficiency projects. Funds for these loans are listed in the Lawton Loans section of the Program Book (Section E of this section).

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FY 11 Accomplishments

During FY 2011, MEA, in partnership with the University of Maryland Energy Technology Service, completed 6 commercial and industrial assessments from around the state. The following table lists the assessments conducted during FY 2011.

| ENERGY ASSESSMENT C & I PROGRAM FY11 | |
|---|-------------|
| COMPANY NAME | CITY |
| Cambridge International | Cambridge |
| MedImmune | Frederick |
| ATK Space | Beltsville |
| General Motors | White Marsh |
| Under Armour | Baltimore |
| Kent Island Waste Water Treatment Plant | Kent Island |

MEA also coordinated workshops and educated the commercial and industrial communities on the important tools and techniques for energy spend reduction. The following is a list of seminars conducted in FY11.

| WORKSHOP NAME |
|--|
| Prioritize Energy Opportunities at Your Manufacturing Facility |
| Compressed Air Systems – Understanding and Targeting Energy Saving Opportunities |
| Pumping Systems – Understanding and Targeting Energy Saving Opportunities |
| Industrial Project Successes Using EmPOWER Maryland Utility Incentives |
| Combined Heat and Power 101 |
| Efficient Lighting Technologies |

Return on Investment

MEA utilizes the authority in the DOE grant and Lawton Loan Program to offer commercial and industrial businesses assistance for energy efficiency projects. The program makes energy efficiency projects economically attractive in comparison to other efforts. Programs that create incentives for the most cost-effective energy efficiency measures for commercial and industrial customers will see significant energy savings.

MEA EmPOWERing Maryland Clean Energy Programs FY12

| Program Goal | Projected Results |
|---|---------------------------------------|
| Annual reduction in energy consumption | 9,000 MWh equivalent |
| Savings equivalent to the energy consumption of X number of MD homes per year | 731 homes |
| Annual savings | \$1,046,700 per year |
| Life Cycle saving | \$15,700,500 (over 15 years) |
| Carbon Dioxide Emissions Avoided | 5,778 tons |
| Equivalent to cars off the road | 1,118 cars |
| Participants | 281 (6 audits/275 workshop attendees) |
| Jobs Created/Retained | 5 |

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C. State Agency Loan Program (SALP)

Budget: \$ 2.5 million (Revolving SALP loan applications)

SALP is a revolving loan program administered by MEA. SALP provides zero interest loans (with a 1% administrative fee) to state agencies for energy efficiency improvements.

Beneficiaries

State agencies implementing projects to reduce energy consumption

The Way It Works

MEA will continue to administer the SALP program in partnership with the Department of General Services (DGS). The funding through ARRA will enable Maryland to initiate additional projects to further reduce state agency energy consumption through fiscal year 2012. State agencies pay zero percent interest on these loans with a one percent administration fee. The majority of the funds will be linked with Energy Performance Contracts (EPCs) developed by state agencies working with both the DGS and MEA. Up to 20% of the funds will be available through a MEA solicitation process for smaller energy projects for which the EPC process is not appropriate.

FY 11 Accomplishments

In FY11 awards went to UMES Biological Labs, the State Highway Administration for highway lighting, a Maryland Aviation Administration project at BWI, and the Maryland Port Authority. In addition, MEA routinely issues a solicitation to State Agencies for 20% of the SALP loan funds reserved for smaller projects. In FY11 MEA created a loan agreement with the UMCES-Horn Point and the University of Maryland at College Park for classroom lighting.

Return on Investment

Funding in FY 2012 is estimated to create 28 jobs and save over 3,000 MWh. The cumulative total over the lifetime of the installed energy measures from loans made in FY 2011 is projected to be \$5.4 million.

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| Program Goal | Projected Results |
|---|-------------------------------|
| Annual reduction in energy consumption | 3,000 MWh equivalent* |
| Savings equivalent to the energy consumption of X number of MD homes per year | 242 homes |
| Annual savings | \$360,000 per year |
| Life Cycle saving | \$5.4 million (over 15 years) |
| Carbon Dioxide Emissions Avoided | 1,926 tons |
| Equivalent to cars off the road | 370 cars |
| Participants | 8 loans |
| Jobs Created/Retained | 28 |
| Leverage | \$22.5 million |

*MWh estimated savings for the SALP Program are calculated using the ARRA/ DOE calculator which yields approximately 1.2 KWh of savings annually for each \$1 loaned, or 18 KWh of savings over the 15-year life of the investments for each \$1 loaned.

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D. EmPOWERing Clean Energy Communities

Budget: \$ 250,712 (ARRA EECBG)
\$ 2,188,540 (SEIF funds for low-to-moderate income grants)
\$ 2.44 million (Total)



Using a \$50,000 grant from the MEA, residents of the Cedar Lane Senior Living Community in Leonardtown now save money on energy bills while enjoying a comfortable indoor climate regardless of weather.

The overall EmPOWER Clean Energy Communities initiative consists of two smaller programs: the EmPOWER Energy Efficiency and Conservation Block Grant program (EmPOWER EECBG) and the EmPOWER Clean Energy Communities low-to-moderate income (EmPOWER LMI) competitive grants.

Beneficiaries

The EmPOWER Clean Energy Communities program directly benefits Maryland local governments and non-profit organizations. As a result of the EmPOWER EECBG program, local Maryland governments lower their overall operating costs. Through the EmPOWER LMI grant program, low and moderate income Marylanders are able to reduce their home's energy use, directly improving their household finances. Additionally, many retrofits funded by the EmPOWER LMI program also result in healthier, more comfortable homes.

The Way it Works

EmPOWER EECBG

Under the EmPOWER EECBG program, DOE provided \$9.59 million to MEA to fund sub-grants to Maryland municipalities in order to enable energy efficiency and/or renewable energy projects on local government facilities. The EmPOWER EECBG funding will go to the Maryland municipalities not receiving direct funding through the U.S. DOE EECBG program. Funding levels were determined using a population based formula. EECBG grant funds are being distributed over a three year grant period with FY 2012 being the last year of the three year grant period.

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To support the recipient local governments, MEA has procured a technical assistance contractor to complete an energy audit for each local government and to provide assistance in complying with the federal requirements associated with the American Recovery and Reinvestment Act (ARRA).

EmPOWER Clean Energy Communities Low-to-Moderate Income Grants

In FY 2012, the EmPOWER Clean Energy Communities Low-to-Moderate Income Grant program anticipates having \$2.18 million in grant funds available for energy efficiency projects that benefit low-to-moderate income Marylanders. According to the FY11 grant applications, grantees are estimated to match these funds with an estimated \$2.21 million in leverage.

Grants will be awarded to local governments and non-profits who then deliver energy services to low-to-moderate income households in their communities. Energy services funded under this program include energy efficient HVAC replacements, air sealing, insulation, and ENERGY STAR appliance upgrades.

FY 11 Accomplishments

EmPOWER EECBG*

Through the EmPOWER EECBG program, MEA's technical assistance team has completed 129 energy audits across the State of Maryland, assessing the relative energy performance of an estimated 2.6 million square feet of local government building space. In fiscal year 2011, thirteen of MEA's EECBG grantees completed EECBG-funded project construction. An additional 70 MEA EECBG grantees are in the process of procuring and/or constructing their EECBG project.

EmPOWER Clean Energy Communities Low-to-Moderate Income Grants**

During fiscal year 2011, MEA awarded over \$2 million in EmPOWER Clean Energy Communities Low-to-Moderate Income Grants. These grants enabled forty-two energy efficiency projects across all 23 Maryland counties and in Baltimore City.

Return on Investment

In fiscal year 2012, MEA anticipates approximately 23 jobs being created or retained through the EmPOWERing Clean Energy Communities programs.

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Additional benefits of this program include:

| Program Goal | Projected Results |
|---|-------------------------------|
| Annual reduction in energy consumption | 3,620 MWh equivalent* |
| Savings equivalent to the energy consumption of X number of MD homes per year | 220 homes |
| Annual savings | \$360,000 per year |
| Life Cycle savings | \$5.4 million (over 15 years) |
| Carbon Dioxide Emissions Avoided | 2,000 tons |
| Equivalent to cars off the road | 250 cars |
| Number/Participants | 40 grants/loans |
| # of Low/Moderate Income families assisted | 2300 |
| Jobs Created/Retained | 23 |
| Leverage | \$2.21 million (LMI) |

*Energy Efficiency and Conservation Block Grants

Energy savings estimates for the Energy Efficiency and Conservation Block Grant (EECBG) program were initially estimated during energy audits of the local government facilities.

**EmPOWER Clean Energy Communities LMI grants

Estimated energy savings for the EmPOWER Clean Energy Communities Low-to-Moderate Income Grant Program are calculated based on the estimated energy savings from the Program's fiscal year 2011 projects. The fiscal year 2011 energy saving estimates were calculated in multiple ways, but the majority of the energy savings estimates came from the U.S. Department of Energy ARRA calculator (available for download at http://www.energy.state.md.us/documents/ARRA_Benefits_Reporting_Calculator.xls). Using fiscal year 2011 data, for every dollar invested in the EmPOWER Clean Energy Communities Low-to-Moderate Income Grant Program, Marylanders are estimated to save annually about 0.8 kWh of electricity, 2.87 cubic feet of natural gas, and 0.0025 gallons of fuel oil.

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E. Jane E. Lawton Conservation Loan Program

Budget: \$2.5 million (Revolving Funds)



In FY11, MEA provided financing worth \$600,000 to implement major energy-efficiency improvements at One North Charles, a 25-story commercial building in downtown Baltimore.

The Jane E. Lawton Conservation Loan Program provides eligible non-profit organizations (including hospitals and private schools), local governments (including public school systems and community colleges), and businesses in Maryland a unique opportunity to reduce operating expenses by identifying and installing energy conservation improvements. The program honors the late Delegate Jane E. Lawton for her dedication to Maryland's environment and energy efficiency.

Beneficiaries

Local governments, non-profit organizations, and businesses that undertake upgrades to improve the energy efficiency of buildings.

The Way It Works

The Lawton Loan Program allows borrowers to use the cost savings generated by added improvements as the primary source of revenue for repaying the loans. This neutral budget impact makes the Lawton Loan Program an attractive financing opportunity for interested organizations.

By offering the Lawton Loan Program as a revolving loan fund rather than a one-time grant, MEA maximizes its limited funds. Repayments and interest earned by

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the fund will allow the program to continue making loans for the foreseeable future.

Projects applying for funding through the Lawton Loan Program should have a simple payback of 10 years or less. All costs necessary for implementing an energy conservation project can be considered for funding, including the technical assessment, reasonable fees for special services, plans and specifications, and the actual costs of the conservation measures. The interest rate for all Lawton Loans made during FY12 will be 2.5 percent.

FY11 Accomplishments

MEA made four Lawton Loans totaling \$1,335,000 in FY11 to three businesses and one non-profit organization. The four projects financed by these four loans will save an estimated \$620,000 in energy costs annually.

| FY11 Lawton Loans Closed & Committed | Amount Awarded | Project Location |
|---|-----------------------|-------------------------|
| One North Charles | \$600,000 | Baltimore City |
| Bais Yaakov School for Girls | \$184,000 | Baltimore Co. |
| 2219 York Road | \$51,000 | Baltimore Co. |
| BWI Hilton | \$500,000 | Anne Arundel |

Return on Investment

The four Lawton Loans made in FY11 finance projects with an average payback of five years. As the four borrowers repay the loan principal plus interest into the Lawton Loan revolving fund, MEA will make future investments in cost-effective energy efficiency and conservation projects.

Aside from the annual energy cost savings realized by borrowers, Lawton Loans typically achieve a high degree of leverage of funding from other sources, including borrower contributions and utility rebates. The four loans made in FY11 are leveraging about \$925,000 from other sources.

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| Program Goal | Projected Results |
|---|--------------------------------|
| Annual reduction in energy consumption | 6,750 MWh equivalent* |
| Savings equivalent to the energy consumption of X number of MD homes per year | 548 homes |
| Annual savings | \$785,000 per year |
| Life Cycle savings | \$11.8 Million (over 15 years) |
| Carbon Dioxide Emissions Avoided | 4,334 tons |
| Equivalent to cars off the road | 688 cars |
| Participants | 6 businesses/governments |
| Jobs Created/Retained | 4 |
| Leverage | \$925,000 |

*MWh estimated savings for the Lawton Loan program are calculated based on average energy savings from projects financed in FY11, which yielded an average of 2.7 KWh of savings annually for each \$1 invested, or 40.5 KWh of savings over the 15-year life of the investments for each \$1 invested. These estimates are based on energy assessments performed by professional engineers. MEA verifies the validity of energy savings for Lawton projects.

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F. Maryland Home Performance Program

Budget: \$ 854,249 (ARRA FY 2012)

This ARRA funding will help to further incentivize consumers to perform diagnostic audits and whole-house energy improvements. This funding will be available on top of the current rebates offered by local utility companies. This program is modeled after the proposed federal Home Star program which is also referred to as the "Cash for Caulkers" program. This is a continuation of a program which launched on January 21, 2011.

Beneficiaries

Maryland homeowners, Home Performance contractors

The Way it Works

Consumers will receive direct rebates for energy efficiency work done to their homes. These rebates will be in addition to rebates offered by most Maryland utilities, or tax credits from local or federal sources. Most consumers will work through their local utility to have a diagnostic energy audit performed on their home. MEA will reimburse the consumer for 35% of the cost of the audit and improvements. This rebate will be in addition to the 15% rebate the customer is eligible for from their utility provider.

FY 11 Accomplishments

MEA reserved the full \$1 million in funding for Maryland homeowners performing energy retrofits on their homes in the first five months of the program, serving more than 600 Maryland households. The average rebate was \$1,500. As the rebates covered just 35% of the job cost, this program leveraged an additional \$2.8 million in private funds for home energy improvements. In FY 12, an additional \$500,000 encumbered in FY 11 is available for projects received during the end of FY 11.

Return on Investment

This program will allow an additional 900 Marylanders to access significantly higher rebates when they upgrade the energy efficiency of their homes, leading to a 1,688 MWh reduction in annual energy usage. This program will create or retain about 24 jobs.

Because these rebates only cover 35% of the cost of the project, Maryland will be able to leverage an additional \$3.9 million in private funding to complete home energy improvements

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| Program Goal | Projected Results |
|---|---------------------------|
| Annual reduction in energy consumption | 1,688 MWh equivalent* |
| Savings equivalent to the energy consumption of X number of MD homes per year | 135 homes |
| Annual savings | \$242,903 per year |
| Life Cycle savings | \$3.16 million (13 years) |
| Carbon Dioxide Emissions Avoided | 1,084 tons |
| Equivalent to cars off the road | 325 cars |
| Participants | 900 homes retrofitted |
| Jobs Created/Retained | 24 |

*MWH estimated savings for the HP rebate program were calculated based on the initial EM&V analysis of contractor test-out reports provided for the program, which found an average of approximately 15% energy savings per household.

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Goal 2 - Promote Renewables

A. Residential Clean Energy Grants

Budget: \$ 4.0 million (SEIF)
\$ 0.2 million (ACP)
\$ 1.6 million (FY 2011 ARRA)**
\$ 5.8 million (Total)



With financial assistance from the MEA's Residential Clean Energy Grant Program, Eastern shore homeowners were able to install a 2.4 kilowatt wind turbine system.

Marylanders understand that residential solar, geothermal and wind can significantly reduce their energy bills and reduce the state's carbon footprint. Demand for this program remains strong. Accordingly, based on demand by each technology sector with current grant rebate levels, MEA anticipates it will help approximately 2,100 households take control of their energy future by putting a

renewable system on their home.

Beneficiaries

All Marylanders who can install a small renewable energy system on their home or small business.

The Way It Works

With the ending of ARRA funding in 2012, MEA will use funding from SEIF and ACP to support the installation of qualified solar photovoltaic (PV) and water heating, geothermal and wind systems throughout the state. Qualified applicants are approved on a first come, first serve basis. MEA is providing grants up to \$10,000 for residential solar PV systems, up to \$2,000 for geothermal systems, and a variable scale for residential wind systems. To stretch limited program dollars, MEA has reduced the maximum solar water heating grant to \$500, which started in June, 2011.

FY 11 Accomplishments

MEA's residential renewable energy grants program has proved extremely popular in FY 11 with approximately 2,500 Marylanders receiving grants awarded

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for installing a renewable energy system on their home or small businesses. With the 2011 legislative change, which makes solar hot water systems eligible to generate Solar Renewable Energy Credits, market influences will further support the viability of this particular technology.

Return on Investment

MEA anticipates awarding another 2,900 grants enabling the installation of nearly 8 MW of solar PV and wind power; 4,800 tons of geothermal heat pump capacity; and 34,500 square feet of solar water heating collectors in Maryland. As shown below, increasing the supply of renewable energy products on Maryland homes will help to create almost 100 new jobs and leverage \$72 million, 9 times MEA's investment.

| Program Goal | Projected Results |
|---|--------------------------------|
| Annual reduction in energy consumption | 16,570 MWh equivalent |
| Savings equivalent to the energy consumption of X number of MD homes per year | 1,335 homes |
| Annual savings | \$2.5 million per year |
| Life Cycle savings | \$37.3 million (over 15 years) |
| Carbon Dioxide Emissions Avoided | 10,638 tons |
| Equivalent to cars off the road | 2,048 cars |
| Participants | 2,900 |
| Jobs Created/Retained | 97 |
| Program leverage (multiplier) | \$72.0 million (9x) |

**Includes unspent contractual obligations from FY2011 for residential and commercial grantees and potential carry-over for FY2012 appropriation.

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B. Commercial Clean Energy Grants

Budget: \$ 1.0 million (SEIF)
 \$ 0.5 million (FY 2011 ARRA)**
 \$ 1.5 million (Total)



The Adat Shalom synagogue in Bethesda installed 180 new solar panels with the aid of a \$22,000 Commercial Clean Energy Grant.

The grant program provides financial incentives for the installation of renewable energy systems for Maryland businesses, government and non-profit entities. In addition, an anemometer loan program for small-scale wind provides the equipment necessary to assess wind power potential on a property.

Beneficiaries

All Maryland businesses, government and non-profit entities that have the ability to install renewable energy systems.

The Way It Works

MEA provides grants up to \$50,000 for midsize solar PV systems that are less than 200 kW, and up to \$1,000 for solar water heating systems at commercial buildings. In addition, qualifying wind turbines up to 100 kW are eligible for grants up to \$75,000.

MEA also owns six anemometers, which are loaned out through rotation for qualifying projects on a first come, first serve basis. Qualifying projects demonstrate favorable site conditions, including general topography. Data from anemometers is gathered for one year to determine wind speed characteristics during all seasons, helping to estimate anticipated annual output of the proposed systems.

FY 11 Accomplishments

The Commercial Grant Program provided 55 grants in FY11, representing 2.5 MW of solar PV, 224 square feet of solar water heating, 13 tons of geothermal

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and 102 kW of wind capacity in Maryland. This is an almost 4-fold increase from FY10, where it received 11 solar PV applications and 4 solar water heating applications.

Project Sunburst, an initiative to work with public entities to contract for electricity from solar photovoltaics through power purchase agreements, continued to move forward with great success. Seventeen solar PV projects, representing more than 9 MW of solar PV are completed, under construction, or scheduled to be finished by the end of the calendar year 2011. This particular program will not be funded in 2012, as the resources were from ARRA funds.

All six MEA anemometers were deployed in FY11 and data was collected to establish viability of each proposed project.

Return on Investment

MEA anticipates the current funding will support the addition of 4.5 MW of solar PV and wind, 30 tons of geothermal and 750 square feet of solar water heating capacity to commercial buildings. These renewable energy systems reduce the need to get electricity from the grid. They provide price stability, alleviate congestion on the grid, and are a reliable source of pollution-free energy. This program is estimated to create 45 jobs in FY 12.

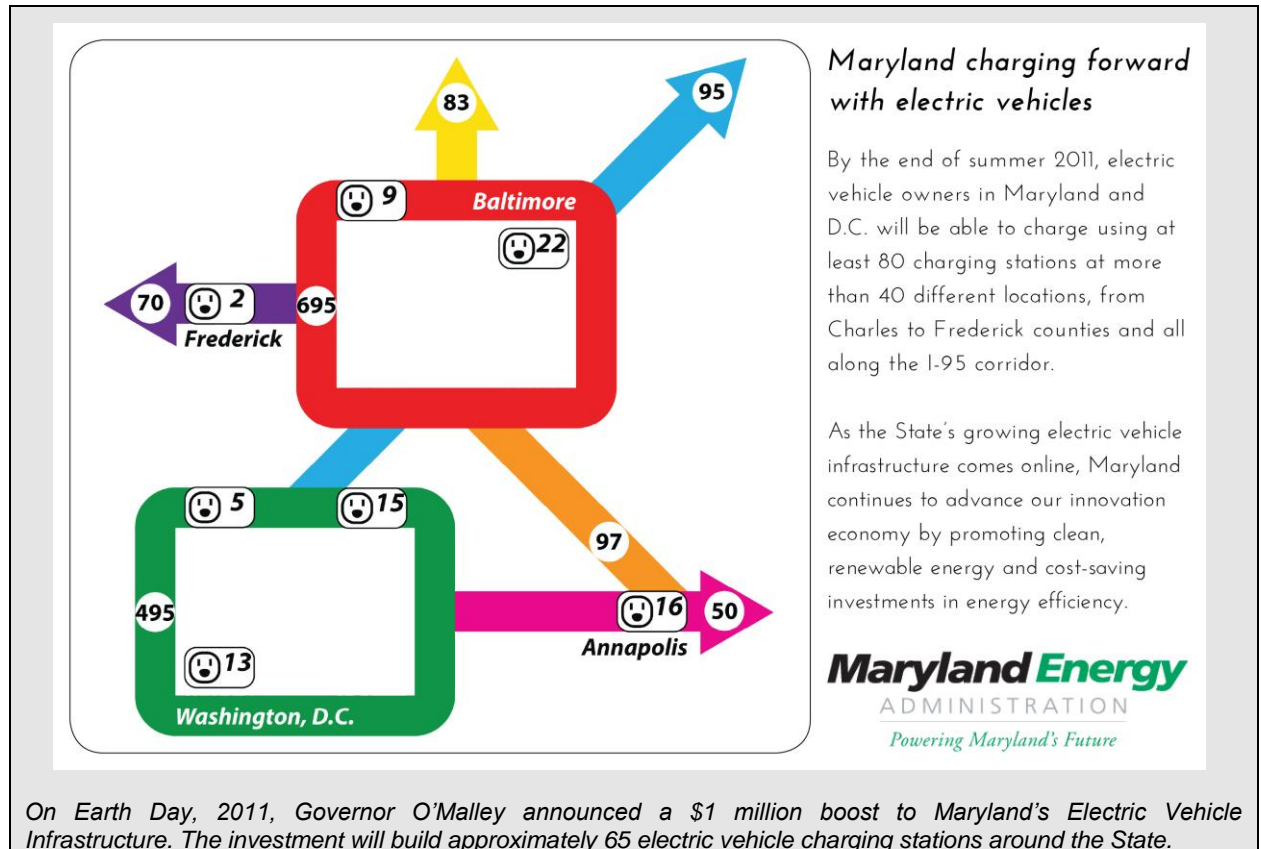
| Program Goal | Projected Results |
|---|--------------------------------|
| Annual reduction in energy consumption | 6,750 MWh Equivalent |
| Savings equivalent to the energy consumption of X number of MD homes per year | 544 homes |
| Annual savings | \$810,000 per year |
| Life Cycle savings | \$12.1 million (over 15 years) |
| Carbon Dioxide Emissions Avoided | 4,334 tons |
| Equivalent to cars off the road | 835 cars |
| Participants | 112 |
| Jobs Created/Retained | 45 |
| Program Leverage (multiplier) | \$22.5 million (10x) |

**Includes unspent contractual obligations from FY2011 for residential and commercial grantees and potential carry-over for FY2012 appropriation.

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C. Transportation Program

Budget: \$ 1.44 million (FY 2011 ARRA)**
\$ 1.44 million (Total)



The transportation sector is responsible for 30% of Maryland's greenhouse gas emissions. Existing and new technologies will help Maryland meet our transportation needs and also reduce emissions. Alternative fuels for use in transportation continue to play a critical part in advancing Maryland's sustainability and energy independence goals. MEA plans to continue implementation of its electric vehicle (EV) grant programs, as well as to execute existing and newly created tax credit programs throughout the year.

Beneficiaries

Local governments, state agencies, fuel providers, service station owners, project developers and other transportation-related businesses.

The Way It Works

MEA supports the expansion of alternative fuel and EV markets in Maryland through a combined effort of grants, tax credits and other programs to support

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planning and strategic growth of this sector. In 2010, MEA created the Electric Vehicle Infrastructure Program (EVIP) to provide grants for the installation of 69 electric re-charging stations. This program will be expanded in 2012 to include fourteen additional stations, bringing the total to 79 publicly available charging stations throughout Maryland. In addition, the \$5.9 million grant from the Department of Energy to run the Maryland Hybrid Truck Initiative (MHTI) will be completed this year, providing grants to 5 partners to assist in the purchase of 143 heavy duty hybrid vehicles.

MEA, in partnership with the Maryland Department of Transportation (MDOT), implements the Governor's Electric Vehicle Tax Credit Program, providing up to \$2,000 of the titling tax for an electric vehicle. Additionally, 2011 legislation created the Electric Vehicle Recharging Tax Credit Program, providing a tax credit up to \$400 for the purchase of an electric vehicle recharging station. These two tax credit programs will further support the use of electric vehicles.

MEA is a participant, along with MDOT and the Public Service Commission (PSC) on the Electric Vehicle Infrastructure Council, which is developing a comprehensive action plan to facilitate the successful integration of electric vehicles within Maryland's transportation sector. MEA also will assist the PSC in establishing an Electric Vehicle Pilot Program to create incentives for electric customers to recharge EVs during off-peak hours.

FY 11 Accomplishments

The MHTI consortium deployed 78 of 143 heavy duty hybrid vehicles during FY2011.

Through the EVIP Program, approximately 40 of 69 initial EV charging stations were installed. An additional 14 opportunities for EV charging stations were identified for expansion of the program.

The EV Tax Credit Program provided 64 credits totaling \$126,387 in FY11.

Return on Investment

MEA anticipates an additional fourteen EV stations to be identified and installed in 2012, as well as \$1,440,000 in tax credit allotments for both EVs and EV charging stations. The program will reduce greenhouse gas emissions and petroleum/fossil fuel consumption. It will also increase energy security and stimulate the economy.

| Program Goal | Projected Results |
|--|--------------------|
| Gallons of conventional gasoline saved* | 175,919 gallons/yr |
| Life Cycle savings- gallons | 1,407,353 |
| Participants (EV Stations/EV cars/tax credit participants) | 1,720 |

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*Estimated 470 vehicles through the program in FY12. 235 are estimated to be BEV's and 235 are estimated to be PHEV's

Average total fleet MPG (conventional): 22.6

(http://www.bts.gov/publications/national_transportation_statistics/html/table_04_23.html)

Average annual VMT (conventional): 12,000

Average gallons consumed (conventional): 531

Estimate VMT (all electric): 8,000

DOE Volt MPG: 88

**Includes unspent contractual obligations from FY2011 and potential carry-over for FY2012 appropriation.

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D. Off-Shore Wind

Budget: MEA is supporting through internal staff resources and does not have additional funding associated with this initiative.

Beneficiaries

All Marylanders will enjoy the environmental and public health benefits associated with large-scale renewable energy development. The State will be able to take advantage of the rate stability, domestic renewable energy production and grid congestion relief. Also, there is a significant business growth opportunity for the existing and potential supply chain providers of offshore wind development.

The Way It Works

MEA will continue its support of the Governor's legislative proposal from 2011, to encourage the development of offshore wind for Maryland. This will call for continued coordination with other state agencies (DNR, DBED and PSC) along with its mid-Atlantic regional partners Delaware and Virginia, plus the Department of Interior's Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE). As a result of the legislative and regulatory work done in 2011 and continued through 2012 and beyond, MEA has set a goal for offshore wind projects to begin generating clean, renewable energy for Marylanders by 2017.

Return on Investment

Offshore wind has been identified as an "outstanding resource" in the mid-Atlantic region by the US Department of Energy, with the potential to supply more renewable energy than any other resource in the region. With the execution of a 500 MW offshore wind project through the mechanism of a Power Purchase Agreement with the State's utilities, Maryland would satisfy between 10 and 15 percent of Maryland's 2022 renewable energy goals. According to a Department of Business and Economic Development report, the direct and indirect economic impact over five years is more than \$1.9 billion, 8,200 job-years and \$14 million in state tax revenues.

FY 11 Accomplishments

During the 2011 legislative session, MEA supported Governor O'Malley's proposed House Bill 1054 (HB 1054 / SB 861) Maryland Offshore Wind Energy Act of 2011, requiring the development of 400 to 600 MW of offshore wind capacity, approximately ten nautical miles off of Maryland's coast. While not passed during the 2011 session in lieu of further study by lawmakers during the summer, MEA is working towards further clarification and reconsideration of the bill during 2012.

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In addition, at the request of Governor O'Malley, the U.S. Department of Interior's (DOI) Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) created the Maryland State/Federal Offshore Wind Task Force. This task force developed initial siting recommendations, making Maryland the second State in the nation to have a Request for Interest (RFI) issued for wind leases off its shores. Further planning and Wind Energy Area refinement will be developed in 2012 to ensure mitigation of potential impacts on marine navigation, ecology, fisheries and other uses.

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Goal 3 – Encouraging Innovation and Energy Security

A. EmPOWERing Financing (EF) Initiative

The EmPOWERing Financing Initiative seeks to leverage private capital to provide accessible and affordable financing for residential energy efficiency improvements.

Beneficiaries

Maryland homeowners who invest in energy efficiency improvements and equipment.

The Way It Works

The EmPower Financing Initiative has led to a partnership between MEA and the Maryland Clean Energy Center (MCEC) to secure private capital to provide loans to Maryland property owners interested in improving the energy efficiency of their homes. The Maryland Home Energy Loan Program (MHELP) is designed to complement existing utility rebates and the MEA's Home Performance Rebate Program to help homeowners overcome the up-front cost barriers associated with whole-house energy efficiency upgrades.

Homeowners implementing whole-house energy efficiency improvements in the Maryland Home Performance with ENERGY STAR Program may finance between \$2,500 and \$20,000 at 6.99% for up to 10 years. Homeowners only installing energy efficiency equipment may finance the same amount for up to 10 years at 9.99%.

FY11 Accomplishments

MCEC launched MHELP in January and approved loans using the ARRA seed capital worth over \$400,000. MCEC is also engaging in a partnership with a Baltimore-based bank to significantly expand the program and increase the amount available for financing residential energy projects.

Return on Investment

By helping to overcome upfront costs associated with clean energy investments, the EmPOWER Financing Initiative and MHELP will enable Maryland homeowners to invest in energy efficiency, save money, and conserve energy. MHELP is designed to complement MEA's Home Performance Rebate Program as well as EmPOWER rebates offered by Maryland's utilities.

Starting in FY 12, MCEC has established a loan-loss reserve to leverage private capital loaned through MHELP by private lenders. Loan-loss reserves help to

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protect private lenders in rare cases where loans reach default. At a conservative 10:1 ratio (i.e., 10 private dollars leveraged for every one ARRA dollar in the LLR), MEA and MCEC expect to lend up to \$15 million to Maryland homeowners in the coming years.

| Program Goal | Projected Results |
|---|-------------------------------|
| Annual reduction in energy consumption | 882 MWh equivalent* |
| Savings equivalent to the energy consumption of X number of MD homes per year | 72 homes |
| Annual savings | \$127,000 per year |
| Life Cycle savings | \$1.9 Million (over 15 years) |
| Carbon Dioxide Emissions Avoided | 566 tons |
| Equivalent to cars off the road | 90 cars |
| Participants | 350 |
| Jobs Created/Retained | 20 |

* MWh estimated savings are calculated based on average energy savings for EmPOWER Financing loans made in FY11, which yielded an average of 0.59 KWh of savings annually for each \$1 invested, or 8.85 KWh of savings over the 15-year life of the investments for each \$1 invested. Loans may be combined with other incentives made available by MEA and utilities.

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B. Clean Energy Economic Development Initiative

Budget: No budget in FY 12

As Maryland moves to quickly build a vibrant clean energy sector and strives to create 100,000 “green-collar” jobs by 2015, the Maryland Energy Administration’s (MEA) Clean Energy Economic Development Initiative (CEEDI) continues to assist in the growth of a clean energy industry throughout the State.

Beneficiaries

Maryland businesses looking to grow or expand their clean energy business

The Way It Works

Grantees submitted applications to MEA with budgets, timelines, proposed milestones, and detailed descriptions of the work to be performed. In conjunction with DOE, MEA reviewed each application and then convened a committee to formulate recommendations for awards. The first application cycle ended on November 17, 2009; the second ended on April 30, 2010. CEEDI is not accepting applications for future awards at this point.

FY11 Accomplishments

In FY11, MEA awarded awards to Maryland companies worth nearly \$5.1 million. Of these awards, six grants totaling \$4.2 million remain active and making progress: Advanced Technology and Research (ATR) Corp.; Chesapeake Renewable Energy (CRE); EcoCorp, Inc.; Maryland Brush Company; Maryland Environmental Service (MES); and Strategic Services International (SSI).

Return on Investment

CEEDI has meaningfully boosted six Maryland clean energy businesses, particularly those that manufacture clean energy products, services and materials. The six CEEDI grants totaling \$4.2 million are supporting projects that together are estimated to cost \$52.5 million, resulting in a significant degree of leverage of ARRA funds. Combined, these six companies have projects that are on track to create 51 “green” jobs in Maryland’s clean energy sector.

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C. Energy Assurance Planning

Budget: \$716,898 (ARRA)

MEA is developing a comprehensive Energy Assurance Plan (EAP). The EAP will facilitate recovery from disruptions to Maryland's energy supply and strengthen the State's energy sector resiliency. Additionally, the EAP will serve as a central storehouse for energy-sector specific information and plans such as Maryland's overall energy profile, communication processes, and emergency response plans. The project is expected to be complete in August, 2012 with regular updates thereafter.

Beneficiaries

All Maryland residents by ensuring energy resources will be available when called for and quickly restored in the event of a disruption.

The Way It Works

While Maryland has historical energy plans and reports, the State has not comprehensively gathered all of this information into one document or systematically evaluated our energy assurance needs and capabilities. Further, developing and maintaining a comprehensive EAP will assist in energy emergency response and restoration efforts. MEA has responsibilities under the State Emergency Operations Plan, and an up-to-date EAP will assist MEA and other state agencies in responding to emergencies impacting various energy sectors. MEA has partnered with the Public Service Commission (PSC) and Maryland Emergency Management Agency (MEMA), and contracted with the University of Maryland's Center for Health and Homeland Security (CHHS) to develop the EAP. In addition, MEA will participate in at least one statewide table-top simulation to test and evaluate the EAP during development.

FY11 Accomplishments

MEA's planning efforts are well underway. In FY11, MEA hired its internal program managers to begin the planning process, formally coordinated its efforts with the PSC and MEMA, and retained CHHS to conduct detailed research and begin drafting the EAP. In addition, MEA participated in a regional, 2-day table-top simulation in June to exercise an early draft of the EAP.

Return on Investment

By systematically understanding Maryland's energy sector, including sources and uses of energy, and by having response resources readily available, Maryland

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will be in a better position to minimize and recover quickly from energy disruptions. Having an EAP will help Maryland strengthen its energy security, thereby minimizing negative impacts to the state's economy, health, and welfare.

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APPENDIX: How Projected Results Were Calculated

- [1] Annual reduction in energy consumption:
See individual program by program explanations above.
- [2] Savings equivalent to energy consumption of X number of MD homes per year:
Residential average use in Maryland per household is 12.31 MWh/ year.
Source: http://www.eia.doe.gov/cneaf/electricity/esr/table5_a.xls
- [3] Annual savings:
Residential average per MWh in Maryland is \$144. Commercial average cost per MWh in Maryland is \$116.
Source: <http://www.eia.doe.gov/cneaf/electricity/page/eia826.html>
- [4] Carbon dioxide emissions avoided:
The annual carbon dioxide emissions rate in Maryland is 0.642 metric tons per MWh.
Source: The Maryland Department of Environment, using Maryland-specific data.
- [5] Equivalent to cars of the road:
The average car emits 5.19 metric tons of CO₂ per year.
Source: <http://www.epa.gov/oms/consumer/f00013.htm>