A Resolution To Adopt A Renewable Energy Production Policy
R-21-2014

City Council of the City of Glenarden, Maryland
2013-2014 Legislation

Resolution:	**R-21-2014**
Introduced By:	**Council President Carolyn Smallwood**
Co-Sponsors:	**At the request of the Administration**
Session:	**Regular Session**
Date of Introduction:	**December 9, 2013**

A Resolution To Adopt A Renewable Energy Production Policy

WHEREAS, by agreeing to adhere to the Maryland Energy Administration's Smart Energy Communities Program the City of Glenarden will commit to being a socially responsible leader by decreasing electricity consumption; and

WHEREAS, the City recognizes that investing in renewable energy can produce significant monetary savings in the long term; and

WHEREAS, the Council has determined that it is in the public interest to enroll as a Maryland Smart Energy Community and adopt this Renewable Energy Production Policy ("Policy").

NOW, THEREFORE, BE IT RESOLVED, by the City Council of Glenarden, Maryland sitting in Regular Session this 9th day of December, 2013 as follows:

Section 1: PURPOSE: The purpose of the policy is to:

a) Become a Maryland Smart Energy Community by enrolling within the program and following the program instructions issued by the State of Maryland.
b) Implement a Renewable Energy Goal to reduce use of conventional centralized electricity in City municipal buildings by meeting twenty percent (20%) of electricity demand in the buildings with distributed, renewable energy generation by 2022.
c) Develop and initiate a Renewable Energy Action Plan ("Plan") to enable the City to reach its Renewable Energy Goal.
d) Report electricity consumption and renewable generation capacity annually to the Maryland Energy Administration in order to assure that the City accomplishes said goals in a timely fashion.

Section 2: DEFINITION. For the purposes of this policy, the following terms shall have the meaning given:

a) Renewable Energy – Energy generated from any of the following sources: solar, wind, biomass (excluding saw dust), methane from anaerobic digestion of organic materials, geothermal, ocean, fuel cells powered by methane or biogas, poultry litter, and waste-to-energy facilities.
b) Electricity Consumption – The amount of megawatt-hours (MWhs) consumed by the City on a calendar year basis excluding electricity consumed for streetlights and for buildings owned by the City, but paid for by a building lessee.
c) Renewable Energy Action Plan – Provides details on current and future electricity consumption, estimates required to meet twenty percent (20%) of energy consumption needs with renewable energy consumption, and designs plans with detailed installation measures and time tables that enable the City to reach its 2022 goal.

Section 3: GUIDELINES.

The City will maintain an annual electricity consumption inventory for all City owned buildings and energy consuming entities. This annual inventory will be conducted using Energy Star Portfolio Manager (or equivalent energy management program previously approved by the Maryland Energy Administration), the results of which will be presented to the Maryland Energy Administration by no later than April 1st of each year until the completion of said goals are accomplished.

Inventory

The following information shall be included in an annual inventory of City electricity consumption and provided to the Maryland Energy Administration.

City Building	**Building Size**	**Electricity – Conventional Energy**	**Electricity-Renewable Energy**	**Total MWh**	**Electricity Consumption Intensity**
	Square Feet	MWh	MWh		Total MWh/SF
Total					

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As part of the Renewable Energy Action Plan the City will assess the amount of renewable energy that is currently used within the City. Any currently existing renewable energy will be included within the twenty percent (20%) reduction goal. For example, if the City determines from the Renewable Energy Action Plan that it already meets three percent (3%) of its energy consumption needs with renewable energy, only an additional seventeen percent (17%) of renewable energy production would be required in order to meet the City's final goal.

Finally, the City will implement the necessary projects in order to ensure that the minimum twenty percent (20%) of City building renewable energy consumption is supplemented by locally generated renewable energy sources by the year 2022.

Applicability

This policy applies to all departments of the City.

Implementation Team

The following City staff will be responsible for overseeing this project and implementing the Renewable Energy Action Plan: City Manager.

Date Approved: December 9, 2013

ATTEST:

Toni Taylor, Council Clerk

City Council of Glenarden

Carolyn Smallwood, President, Ward I

Elaine A. Carter, Vice-President Ward II

Judy Diggs, Councilwoman, At Large

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Deborah A. Eason, Councilwoman, Ward II

James Herring, Councilman, Ward I

Jennifer A. Jenkins, Councilwoman, Ward III

Maxine Phifer, Councilwoman, At Large

Yes -6-
No -0-
Abstain -0-

EECBG
AUDIT REPORT

Maryland Energy ADMINISTRATION
Powering Maryland's Future

December 9, 2013

Mr. Bill Reaves
City of Glenarden
8600 Glenarden Place
Glenarden, MD 20706
breaves@cityofglenarden.org

Dear Mr. Reaves:

On behalf of the Maryland Energy Administration's (MEA) EmPOWER Energy Efficiency and Conservation Block Grant (EECBG) program, MEA Technical Assistance Team member Khepra Energy Group has performed a field audit showing preliminary energy savings and financial analysis of energy efficiency improvements for the Town of Glenarden.

This *Audit Report* presents summary information regarding your proposed EECBG project. Please feel free to use this information in submitting your project for MEA approval.

PROJECT DESCRIPTION & ADDRESS

1. **Municipal Building: HVAC Consolidation**
    a. Recommended Energy Efficiency/Conservation Measures (EECMs) from information determined during field audit
        i. Demo 9.0 EER, 4 ton heat pump (1992) located on roof, serving the Conference Room and the 9.0 EER, 2-1/2 ton rooftop unit (1997) serving the TV/Small Office. Ordinary life expectancy of the existing equipment is 15 years.
        ii. Replace with new 19 SEER heat pump condensing unit and 19 SEER rooftop electric cool / gas heat unit.
2. **Municipal Building: T-8 Relamping**
    a. Recommended EECMs from information determined during field audit
        i. Relamp existing T8s with high efficiency T8
3. **Municipal Building: Occupancy Sensors**
    a. Recommended EECMs from information determined during field audit
        i. Install occupancy sensors throughout the building
4. **Location**
    a. Municipal Hall
    8600 Glenarden Parkway
    Glenarden, MD 20706

BASELINE ANALYSIS

1. Energy Consumption

A year of electricity and gas bills were provided.

The following table summarizes the baseline consumption data and projected savings from the results of the field audit.

Assumptions and calculations performed in the analysis:

Upgrade Poor Efficiency HVAC

- Existing Heat Pump – 10.0 SEER (4.8 kW), 7.0 HSPF (6.86 kW)
- Existing RTU – 8.5 EER (3.53 kW)
- New Heat Pump – 19.0 SEER (2.53 kW), 9.5 HSPF (5.05 kW)
- New RTU – 19.0 SEER, 17 EER (1.76 kW)
- Full Load Cooling Hours 1,080, Full Load Heating Hours 890
- Existing Energy Use - 5,184 kWh [HP_c] + 6,103 [HP_h] + 3,812 [RTU_c]
- New Energy Use - 2,728 kWh [HP_c] + 4,497 [HP_h] + 1,906 [RTU_c]

Relamp T8

- Replace 153, T-8, 32 watt lamps with T-8, 25 watt lamps

Add Occupancy sensors

- Add 40 occupancy sensors
- Overall lighting reduced by 780 hours per fixture

Table 1: Historical Baseline Data and Projected Savings

		Replace HVAC Units	Relamp	Install Occ. Sensors	Totals
a.	Average annual energy consumption[1]				
	Electricity [kWh]	15,099	70,785	70,785	162,945
	Natural gas [Therms]	0	0	0	0
b.	Number of hours of operation	1,080 cooling 890 heating (full load hours)	~2,100-8,760	~780 reduction	N/A
c.	ECM Energy Consumption				
	Electricity [kWh]	9,311	56,508	65,587	126,807
	Natural gas [Therms]	0	286	104	332
d.	Annual energy consumption savings				
	Electricity [kWh] {a_1-d}	5,967	14,277	5,198	36,138
	Natural gas [Therms] {a_2-c}	0	-286	-104	-332

[1] Calculated based on estimated wall area

2. Utility Bill Analysis

Electric service is provided by BGE. Economic savings calculations are based on an estimated average blended tariff rate of **$0.1228 per kWh**. The rate includes all surcharges, which are added on a per-kWh basis.

Natural gas is provided by Washington Gas. The average tariff rate for natural gas is **$1.143 per Therm.**

EECBG PROJECT ANALYSIS

The analysis methodology used is consistent with the *International Performance Measurement and Verification Protocol* (www.ipmvp.org) adopted in 2009.

1. Costs

The estimated costs of the project are based on the engineering estimated project costs using RS Means Mechanical for consolidating the HVAC system. Installation cost for the occupancy sensors were estimated at $255/ceiling-mounted sensor and $58/wall-mounted sensor. The installation cost for the T-8 replacement is based on $47/lamp.

Based upon our calculations, with your EECBG award of $37,000, you could consolidate existing cooling systems, relamp existing T-8 with high efficiency T-8, and install occupancy sensors.

Table 2: Estimated Costs within EECBG Award Amount

		Municipal Building
a.	EECBG award amount	$37,000
b.	Upgrade HVAC	$14,800
c.	Relamp with high efficiency T-8	$6,567
d.	Install Occupancy Sensors	$6,260
e.	Total cost	$27,627

2. Economic, Energy, and Environmental Benefits

If you use your $37,000 EECBG award to implement the recommended Energy Efficiency/Conservation Measures, we calculate the below estimated energy, economic and environmental benefits.

Table 3: Estimated Energy, Economic and Environmental Benefits

Energy Benefits		Consolidate HVAC	Relamp T-8	Install Occ. Sensors	Total
a.	Electricity Annual Demand Reduction *(kW)*	4	20	0	24
b.	Annual Reduction in Electricity Consumption *(kWh) {From estimated cost and savings table line a.}*	5,967	14,277	5,198	21,626
	Annual reduction in Natural Gas Consumption *(Therms)*	0	-286	-104	-332
c.	Lifetime energy savings from source (Million Btu)	895	913	499	2,299
Economic Benefits					
d.	Installed Cost *($)*	$14,800	$6,567	$6,260	$27,627
e.	Annual Cost Savings *($){From estimated cost and savings table line g.}*	$733	$1,420	$519	$2,276
f.	Simple Payback *(years) { d÷e}*	20.2	4.6	12.1	12.1
g.	Lifetime Cost per Million Btu *($){ d÷c}*	$16.54	$7.19	$12.55	$12.02
Environmental Benefits					
h.	Annual carbon dioxide emission reductions (kg)	3,079	5,765	2,100	9,299
i.	Lifetime carbon dioxide emission reductions (Metric Tons)	46.2	46.1	25.2	116.8
j.	Lifetime Cost per Metric Ton of carbon reduced *($){ d÷i}*	$320.45	$142.40	$248.46	$236.54

3. Additional Benefits

Reducing the lighting power will have the secondary benefit of reducing cooling demand in the building. The occupancy sensors can reduce the cooling demand further.

RECOMMENDATIONS

Recommended EECMs

After analyzing your potential energy efficiency/conservation measures (EECMs), **we recommend that you implement all three EECMs.** The existing low efficiency cooling equipment can be replaced to reduce operating costs while eliminating near term equipment replacement costs. You will save additional energy by relamping the existing T-8 lamps with high efficiency T-8 lamps and installing occupancy sensors in all spaces. In addition to energy savings, the relamping and occupancy sensor replacement measures provide savings in maintenance reduction costs not accounted for in this analysis.

We can confirm that the recommended EECMs are eligible to receive EmPOWER EECBG funds, are within your EECBG budget, will reduce energy consumption and/or generate clean energy, and have reasonable payback. Keep in mind EECM costs are estimates and may change after you have actual costs from contractor bids, which in turn may affect estimated payback.

If you have EECBG funding still available after recommended EECMs are approved and implemented, you may want to contact Account Manager to explore ways to spend down the total award on "loose change" EECMs—such as CFL lamps, overhead fluorescent fixtures, or exit signs; central or window air conditioners, or a gas furnace; hot water tanks, tankless water heaters, or solar water heating systems; or ENERGY STAR-rated appliances including refrigerators, dishwashers, computers, and copiers.

Next Steps

Following MEA approval, your Account Manager will work with you on Post-Project Approval steps. Please review Addendum D of your ARRA Addendum to the EECBG Grant Agreement for more information on the procurement requirements.

MEA and the EECBG Technical Assistance team would also like to be sure that you are aware of the following additional energy project funding sources that are available in case you wish to consider implementing future energy projects:

- EmPOWER Programs. Maryland electric utility rebate programs (e.g., for lighting and HVAC) include: Baltimore Gas & Electric: http://www.bgesmartenergy.com/
- MEA's Jane E. Lawton Loan Program. This Maryland state program has a limited amount of energy efficiency loan funding available that local governments are eligible for. The minimum loan size is $40,000 so this could be useful for projects that need a substantial amount of additional funding. For more information, browse to http://energy.maryland.gov/incentives/state-local/janeelawton.asp.

If you decide to leverage non-ARRA financial resources to expand your EECBG project beyond the scope estimated to be fundable using your grant, please keep in mind that if you commingle other funds with your EECBG grant for additional measures, you will be required to comply with all ARRA reporting requirements.

If you would like to discuss this analysis in greater detail, please contact me or your Account Manager.

Sincerely,

John Segletes

John A. Segletes, CEM
MEA Technical Assistance Team Energy Auditor
Khepra Energy Group
jsegletes@khepragroup.com

PROJECT APPROVAL CHECK LIST

As outlined in Attachment E of your EECBG grant agreement, once you have decided on the project that you wish to implement with your EECBG grant funds, MEA must approve your project.

Below is a check list of items that must be submitted to MEA in order for your project to be approved. Your Technical Assistance Team representative will work with you to compile the documentation listed below and to submit the appropriate documentation to MEA.

Check List of Items for Project Approval	
1. Eligible Technology	
☐	a. Ensure that the proposed project is on the list of eligible energy technologies contained in Attachment A of your EECBG grant agreement.
2. Audit Report	
☐	a. Ensure that the project energy savings have been quantified in the *Audit Report* provided by MEA's Technical Assistance Contractor.
3. Historic Preservation	
☐	a. Submit Historical Preservation documentation to MEA. This can consist of either 1) a completed *Maryland Historical Trust (MHT) Project Approval Form* (Attachment C[2] of your grant agreement) signed by MHT *or* 2) documentation from MEA's qualified historian that your project is eligible to be exempted from the MHT review process under the Programmatic Agreement between MEA, MHT, and the U.S. Department of Energy (DOE).
4. Waste Management Plan	
☐	a. Complete and Submit the Maryland *EECBG Waste Management Plan Template, Part 1* (Attachment B in your EECBG grant agreement).

Your completed forms and supporting documentation should be sent to your assigned Technical Assistance Team *Account Manager,* who will make the forms available to MEA for review.

After review by MEA, MEA will send a signed copy of the EECBG *Project Approval Form* (Attachment E of your EECBG grant agreement) to you. Only after you have a signed copy of the *Project Approval Form* can you proceed to procurement and installation for your project—as detailed in the *Post-Project Approval Checklist* available from your *Account Manager*.

[2] All project forms can be found in your grant agreement, and also on MEA's EECBG website: http://www.energy.state.md.us/EECBG.asp