

# Solar Initiatives

City of Bowie, Maryland

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# Bowie Solar Initiatives Began in 2010...

- Bowie was a recipient of the Energy Efficiency and Conservation Block Grant (EECBG) issued by the U.S. Department of Energy under the American Recovery and Reinvestment Act of 2009 (ARRA).
- As part of the grant, a comprehensive energy and sustainability strategy report for the City of Bowie was prepared with the help of Environmental Resources Management.
- Report recommended to increase renewable energy technologies on government buildings or land at a minimum rate of 3 kW peak capacity each year.

# Capital Improvement Program

- Starting in 2010, the City used federal funding to install 3 photovoltaic (PV) systems on City buildings.
- After realizing the economic and environmental benefits of the systems, City Council agreed to establish in 2013 a Capital Improvement Program (CIP) to annually fund renewable energy projects.
- The first year allocation was \$50,000. Each subsequent year, currently funded through 2019, includes a 3% escalation. Overall, \$381,500 will be allocated towards the installation of renewable energy technologies by 2019.

# Projects Completed at City Facilities

- Since 2010, 5 PV systems were installed on 4 city facilities of varying size.
- The City spent \$119,315 on the installation of the systems.
- Using conservative estimates of 0.0825 cents/kWh and an average annual energy generation and SRECs (Solar Renewable Energy Credits) generation for each system, it is expected that this total investment for these 5 solar systems will be paid for in 20 years by 2030. In 25 years, it is estimated the City will have saved \$45,620.
- Additionally, to date, the 5 systems have offset 59 tons of harmful emissions, the equivalent of planting 1,515 trees.

# Genealogy Library (2010)

- 3.6 kW system, which has produced 14.63 MWh to date
- \$2,600 in SRECs



# Radio & T.V. Museum (2011)



- 8.8 kW system, which has produced 32.2 MWh to date
- \$2,160 in SRECs

# Park Maintenance Facility (2013)

- Two systems combined and expanded to achieve 30.9 kW
- Due to combining two different inverter systems, calculated savings do not include the original 8 kW system. Since 2013, the 22.9 kW system has produced 30.2 MWh and generated \$2,193 SRECs.



# Senior Center (2014)



- 15.25 kW system , which has produced 8.55 MWh to date
- Will generate future SRECs



# What about Residential Solar?

- Many incentives exist such as the Prince George's County tax credit, Federal and State credits/ rebates, and solar leases are available.
- As of September 2014, 297 residents have installed ~2,400 kW of solar on their homes.

Solar Panel Contractor Count	
Contractor	CountOfContractor
	0
Astrum Solar	2
Astrum Solar Inc	1
Ben Davis	1
Cap City Home Remodeling LLC	1
Cap City Home Remodeling, Inc	1
Gariazzo Living Trust	1
Greenspring Energy LLC	1
Lend Lease	1
Pravin M & Manjula Dalsania	1
Renewable Energy Corp.	4
Seven Seas Energy LLC	1
Soalrcity Corporation	1
Solar Corporation	4
Solar Energy Services Inc.	3
Solar Energy World, LLC	2
SolarCity Corp	87
Solarcity Corporation	3
Sonarcity Corporation	1
Standard Solar Inc.	1
Standard Solar, Inc.	1
Sunwire Energy	1
Vivint Solar	155
Vivint Solar Developer, LLC	3

# Continue Solar Momentum

- A Community Climate Action Plan hopefully will be approved at the beginning of next year. The plan indicates that the largest potential for GHG emission reduction lies in the increased installation of residential and commercial solar.
- This year the City joined Solar Roadmap, which is part of the U.S Department of Energy SunShot Initiative.

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## Residential Solar Potential



36,106 kW of installed solar



7,080 solar-powered homes



8% offset of community-wide electricity use

# Solar Roadmap Goals

Show Active Objectives Only

## Financing Options

Current Progress:  
2 of 4 goals achieved



### ✓ [F1] Support Statewide Efforts to Allow Third-Party Solar Financing, Including Solar PPAs and Leases

**Initial Status:** Solar PPAs and leases are legal and supported in Maryland

**Guidance:** City currently at market best practice! [Take Action](#)

**Goal Achieved!**

### → [F4] Support Statewide Efforts to Allow Community Shared Solar Projects

**Initial Status:** No community solar enabling legislation exists

**Guidance:** Support efforts to ensure state-level utility regulations allow community solar projects. [Take Action](#)

### → [F6] Encourage Local Financial Stakeholders to Establish New Solar Loan Programs

**Initial Status:** Limited awareness of existing solar finance options and incentives within the community currently

**Guidance:** Explore solar financing options and resources available in the region and provide information via webinars and marketing materials to increase visibility and understanding by residents, businesses, industry stakeholders and installers. [Take Action](#)

### ✓ [F7] Promote Availability of Existing Solar Finance Options and Evaluation Tools

**Initial Status:** Limited awareness within the community of existing solar evaluation tools

**Action Taken:** City posted information about solar evaluation and financing on their renewable energy webpage.

**Guidance:** City currently at market best practice! [Take Action](#)

**Goal Achieved!**

## Solar Market Development

Current Progress:  
5 of 6 goals achieved



- ✓ **[M1] Support Aggregate Procurement Program for Residential Sector** 

**Initial Status:** No residential bulk purchase program has been implemented in the City

**Guidance:** The City is supporting a Solar Bulk Purchase Program organized by MD Sun that is scheduled to launch in January 2015. [Take Action](#)

**Goal Achieved!**
- ✓ **[M3] Explore Implementation of Collaborative Procurement Program for Municipal Facilities and Schools**

**Initial Status:** Solar potential has been assessed, but no collaborative procurement has been implemented

**Guidance:** The City is riding Montgomery County's PPA contract to install a large solar PV array on a farm property owned by the City. [Take Action](#)

**Goal Achieved!**
- ✓ **[M6] Explore Installing Solar at Municipal Facilities, Including Landfill and Water Treatment Facilities**

**Initial Status:** City has explored option, but did not move forward due to site constraints

**Guidance:** City currently at market best practice! [Take Action](#)

**Goal Achieved!**
- ✓ **[M6a] Survey Brownfield Sites for Solar Development Opportunities**

**Initial Status:** City surveyed local brownfield sites and found that they are in County's jurisdiction

**Guidance:** City currently at market best practice! Establish a working group with County to identify brownfield sites and solar development options. [Take Action](#)

**Goal Achieved!**
- **[M7] Publicize Solar Workforce Development Resources and Industry Training Tools** 

**Initial Status:** No online resources for solar industry training

**Guidance:** Provide online access to regional and statewide solar standards and best practices as a resource to the installer community and organize an outreach and/or training event in order to generate awareness and understanding. [Take Action](#)
- ✓ **[M8] Provide Solar Educational Resources to Constituents** 

**Initial Status:** City has webpage dedicated to renewable energy information and resources, including a solar map

**Guidance:** City currently at market best practice! [Take Action](#)

**Goal Achieved!**

# Support Statewide Efforts to Allow Third-Party Solar Financing

- Solar Power Purchase Agreements (PPAs) and leases are legal and supported in Maryland.

# Promote Availability of Existing Solar Finance Options and Evaluation Tools

- Solar evaluation and financing information had been posted on City website by providing links to PV Watts and U.S. Department of Energy websites.

The screenshot shows the City of Bowie website's "Renewable Energy" page. The header includes the slogan "+myConnections: Engage your community - connect to news, events and information you care about." and a "Sign In" button. A search bar and a navigation menu are on the left. The main content area features a breadcrumb trail: "Home > Our Community > Green Bowie > Energy and Climate > Renewable Energy". Below this is a "Listen" button. The page title is "Renewable Energy". Under the heading "City Solar Projects", a paragraph states: "The City has several solar systems on City buildings. Listed below are the City buildings with installed solar panels and the size of each system." A bulleted list follows: Genealogy Library (3.6 kW), Radio and T.V. Museum (8.8 kW), Parks and Grounds (30.9 kW), and Senior Center (15.25 kW). Below the list, a paragraph notes: "Additionally, the City of Bowie is a participating member of [Solar Roadmap](#). As a member, the City will work to make installing solar easier and more cost-effective." The section "Residential Solar" contains the text: "Solar is a feasible renewable energy source in our area. Since January 2010, 239 residents have chosen to install solar on their homes. If you are interested in installing solar panels, click below for more information." Three links are provided: "Estimate energy production and savings for your home", "Learn more about rebates/incentives available", and "Learn about solar financing options".

+myConnections: Engage your community - connect to news, events and information you care about. [View more information...](#) Sign In

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## Renewable Energy

### City Solar Projects

The City has several solar systems on City buildings. Listed below are the City buildings with installed solar panels and the size of each system.

- Genealogy Library (3.6 kW)
- Radio and T.V. Museum (8.8 kW)
- Parks and Grounds (30.9 kW)
- Senior Center (15.25 kW)

Additionally, the City of Bowie is a participating member of [Solar Roadmap](#). As a member, the City will work to make installing solar easier and more cost-effective.

### Residential Solar

Solar is a feasible renewable energy source in our area. Since January 2010, 239 residents have chosen to install solar on their homes. If you are interested in installing solar panels, click below for more information.

[Estimate energy production and savings for your home](#)

[Learn more about rebates/incentives available](#)

[Learn about solar financing options](#)

# Support Aggregate Procurement Program for Residential Sector

- The City is supporting a Solar Bulk Purchase Program organized by MD Sun that is scheduled to launch in January 2015.



# Explore Implementation of Collaborative Procurement Program, Facilities and Schools

- The City is riding Montgomery County's PPA contract to install a large solar PV array on a farm property owned by the City.

## Proposed System Configuration and PPA Price

Site	Mounting Type	System Size (kW DC)	Production (kWh/kW DC)	Total Annual kWh in year 1	SolarCity PPA Rate (\$/kWh)	SolarCity PPA Rate Escalation	SolarCity PPA term (years)
Entzian Property	Ground Mount	2,434	1,261	3,069,148	\$0.045	0.0%	20



# CITY OF BOWIE ENTZIAN FARM

SYSTEM SIZE: 2433.9 KW DC

SITE ADDRESS: MITCHELLVILLE, MD

DATE: 8/01/2014

MODULE: CANADIAN SOLAR 305W

INVERTER: SOLARMAX

DESCRIPTION:

PV ARRAY

GROUND MOUNTED RACKING SYSTEM

STRINGS OF 19 MODULES

PRELIMINARY DRAWING - NOT FOR CONSTRUCTION

## ARRAY INFORMATION

MOUNTING METHOD	MODULE COUNT	TILT	AZIMUTH	KW DC
GROUND MOUNT	7980	25	180	2433.9

## GENERAL NOTES

1. THIS SYSTEM IS NON-INTERCONNECTED TO THE GRID.
2. THE SYSTEM HAS AN INTEGRAL AC UPS.
3. ALL ELECTRICAL AND MECHANICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND THE NATIONAL MECHANICAL CODE (NMC).
4. ALL WIRING TO BE DONE TO 2009 NEC.
5. ALL ELECTRICAL WORK SHALL BE DONE BY A LICENSED ELECTRICIAN.

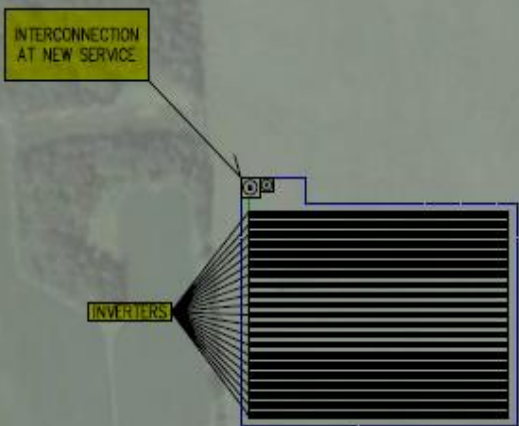
## LEGEND

- ☐ (1) UTILITY METER
- ☐ (2) INVERTER
- ☐ (3) AC DISCONNECT
- ☐ (4) AC DISCONNECT
- ☐ (5) JUNCTION BOX
- ☐ (6) AC DISCONNECT
- ☐ (7) DISCONNECT BOX
- ☐ (8) DISCONNECT BOX
- ☐ (9) DISCONNECT BOX

## SHEET NOTES

1. INVERTER
2. DISCONNECT BY SYSTEM OWNER
3. AC DISCONNECT
4. UTILITY METER
5. AC DISCONNECT

- ☐ (1) LEAD BOARD
- ☐ (2) RACKING SYSTEM
- ☐ (3) RACKING SYSTEM
- ☐ (4) RACKING SYSTEM
- ☐ (5) RACKING SYSTEM



3055 Clearview Way  
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www.solarcity.com



# PPA Projected Timeline

**12-15-14** – Solar City/Montgomery County will finalize contract.

**1-5-15** – City Council approves resolution to allow City to piggyback on Montgomery County/Solar City Project.

**4-1-15** – Finalize Solar City/City of Bowie contract and apply for exemption to Public Service Commission (PSC) Certificate of Public Convenience and Necessity (CPCN).

# PPA Projected Timeline (cont.)

**6-1-15** – Obtain exemption from PSC CPCN (exemption could reduce size of project from 2.4 MW to 1.8 MW). Apply for appropriate utility permits and County Building Permit.

**10-1-15** – Obtain Utility permits and County Building permit and start construction.

**1-1-16** – Construction is completed.

**2-1-16** – Conduct performance testing and coordinate with utility to physically connect and energize.

# Mandatory Referral Process

- Hold pre-application meeting with County planning staff to determine what they will require for the mandatory referral submittal.
- Hold meeting with surrounding community to receive their input.
- Submit formal mandatory referral for project to County.
- Planning staff determines that submittal is complete and 60 day clock begins.

# Mandatory Referral Process (cont.)

- Planning Board notifies community and holds public hearing.
  - Chairman of the Planning Board submits letter informing applicant of the Planning Board's decision.
  - Applicant has 30 days to advise Planning Board whether this decision is accepted if it the decision is against the City.
- \*The mandatory referral process could add another 1 to 3 months to the process timeline.

# Explore Installing Solar at Municipal Facilities, Landfill and Water Treatment

- City has explored option for water treatment facility previously, but did not move forward due to site constraints.
- There is not a landfill inside City limits.
- City has been awarded funds through MEA's Smart Energy Communities Grant and is reevaluating the water treatment site along with other Public Works buildings for solar PV potential.

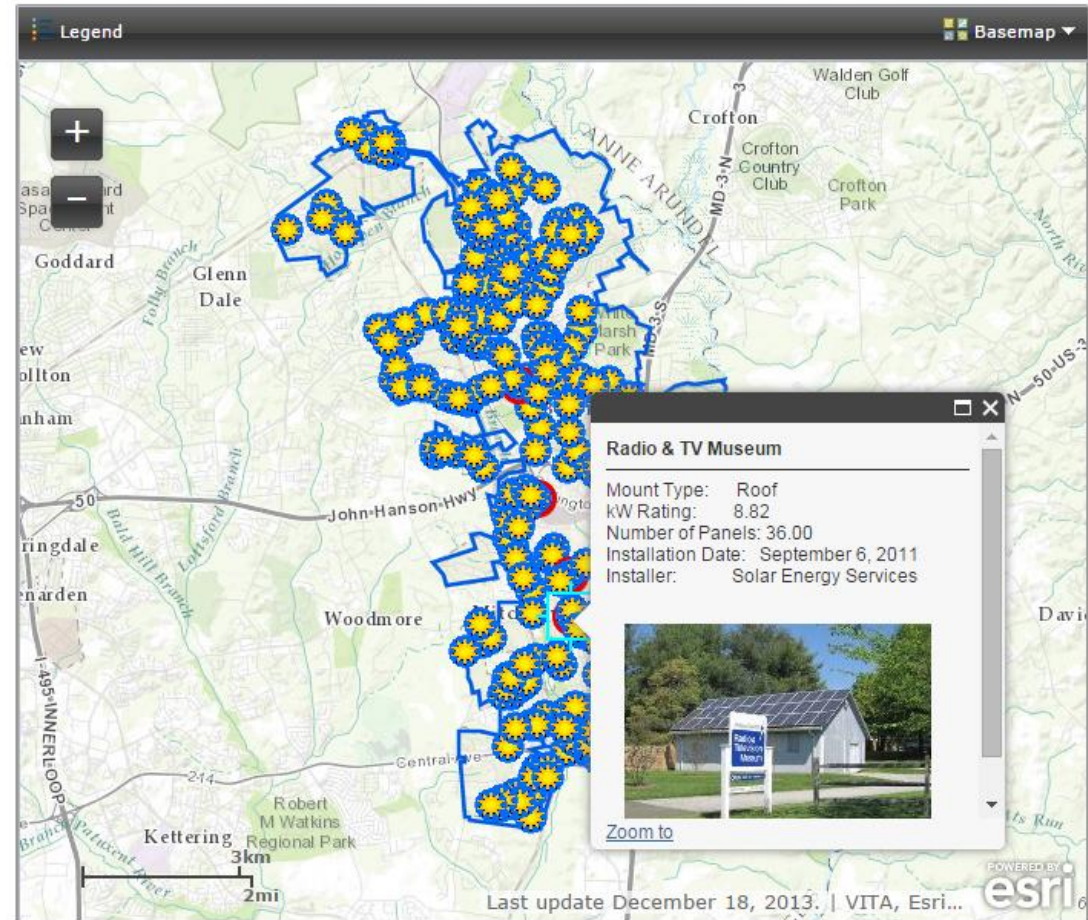
# Survey Brownfield Sites for Solar Development Opportunities

- City surveyed local brownfield sites and found that they are in County's jurisdiction.

# Provide Solar Educational Resources to Constituents

- City has web page dedicated to renewable energy information and resources, including a solar map.

Solar Panel Map





# Plans for Future Initiatives

- Complete remaining Solar Roadmap goals.
- Complete Climate Action Plan actions related to increasing solar by 2020.
- Utilize MEA's Smart Energy Communities Grant funds with CIP solar funds to install solar on public works facilities in 2015.

# Questions?

## Contact Information:

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