

## Community Solar for the LMI Community

### Background

The Maryland State Legislature adopted Community Solar legislation (Public Utility section 7-306.2) during its 2015 session. It directed a three-year Community Solar Pilot Program covering 1.5% of the state's 2015 peak electricity demand (in MW). The Maryland Public Service Commission (PSC) adopted regulations for the program in July 2016 and subsequently approved Community Solar tariffs from the investor owned utilities in April 2017. The utilities began accepting applications for interconnection agreements and program capacity for the Pilot Program's second and third year on October 29, 2018. In 2019, the Legislature increased the program duration to 7 years and directed the PSC to increase the capacity covered by the program.

As amended by new program regulations enacted in 2020, program capacity is allocated by year as follows: Year 1 – 77.5 MW, Year 2 – 77.5 MW, Year 3 – 39 MW, Year 4 – 45 MW, Year 5 – 51.5 MW, Year 6 – 58 MW, and Year 7 – 64.5 MW. An additional 6.5 MW is included across all 7 years for projects less than 50 kW in size. Capacity is allocated among the Investor Owned Utilities (IOU) proportional to their actual peak demand (in MW) recorded in FY 2015.<sup>1</sup> Utilities have the option to accept project capacity that exceeds individual program limits, but must notify the PSC.<sup>2</sup> The Pilot Program's regulations require 30% of the solar capacity be assigned to Low to Moderate Income (LMI) projects, with 10% of each LMI project's total array energy to be used only for the Low Income participants.

Subscriptions offered to the LMI community are likely to use a Power Purchase Agreement (PPA) model. These projects should address the needs of the community, which include:

- **Portability:** Some members of the LMI community move frequently, and therefore, the PPA contract must be portable.
- **Term of Commitment:** Many LMI consumers may shy away from signing long term financial commitments. As such, short term commitments may be preferable to long term commitments.
- **Savings:** Projects should save the LMI household money throughout the subscription period.
- **Knowledge:** Few members of the LMI community have experience with PPA contracts and may not fully understand aspects of the PPA contract. Project marketing must aim to assure that LMI consumers are knowledgeable of key aspects of the PPA agreement that could affect them during the term of the contract.
- **Qualification for the PPA:** In order to gain a favorable financing rate, solar array developers must show a low financial risk, i.e. the ability to reliably pay off the loan on time. Developers often achieve this low financial risk by signing up subscribers that have a high credit score. However, many in the LMI community do not have a high enough credit score to qualify as one of these subscribers. As such, an LMI Pilot project must include a mechanism to reduce the financial risk of having subscribers without high credit scores.

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<sup>1</sup> Maryland has four major Investor Owned Utilities: Potomac Edison (covering western Maryland), PEPCO (now owned by Exelon) covering Washington DC and much of two surrounding counties, Baltimore Gas and Electric Lighting (covering the greater Baltimore Area), and Delmarva Power and Light, which covers much, but not all, of the Eastern Shore of Maryland

<sup>2</sup> COMAR 20.62.02.A(4)

## Strategy

The Maryland Energy Administration's Community Solar grant programs provides incentives to support members of the LMI community's involvement through two linked efforts:

**MEA is supporting a program to minimize LMI Pilot project financial risk** by providing grant funds to a third party to guarantee LMI subscriber payment of community solar energy bills. The use of a payment guaranty fund can serve this function by providing funding to replace payments from LMI subscribers who miss, or are late on their monthly PPA energy payments. The fund will then be reimbursed by the eventual late payments from these LMI subscribers. However, subscribers who fail to make late payments may be unsubscribed and new subscribers found who will meet their monthly obligations. As such, over the life of the project, the subscriber pool should demonstrate reduced risk as unreliable subscribers are gradually replaced by reliable subscribers.

- MEA has provided \$3,000,000 of grant funding to the Climate Access Fund to perform this third party guarantee function. Under its Grant Agreement with MEA, the Climate Access Fund may use available grant funds to minimize financial risks for LMI-PPA projects approved to participate in the Community Solar Pilot project.

**MEA Grants will offer incentives to subscriber organizations** for offering PPAs that provide real value to the LMI community. These grant incentives will encourage PPA contracts with guaranteed savings throughout the life of the project. The rationale for encouraging these types of PPAs is provided below.

- PPA contracts will always show savings at the beginning of the contract term, but will often include a cost escalator clause to account for estimated inflation and cost escalation during the contract period. A common escalator currently in use increases the PPA cost of energy by 2.9% per year over the term of the contract; however, other options are negotiable. If the actual cost of electricity increases by less than the PPA escalator rate, the value of the savings will be diminished over time. Thus, it is possible that the PPA rate will exceed the energy rate charged by the utility. To prevent this loss of value over the life of the PPA contract, the subscriber organization could agree to maintain a constant percentage savings throughout the life of the contract. This could be achieved by having the PPA escalator rate match the long term rate of electricity cost increase in Maryland (about 2%), or by having the subscriber organization agree to set its price as a percentage of the retail price of electricity within the subscriber's electric utility service area. The amount of the MEA grant incentive is designed to recompense the subscriber organization for taking on this inflation risk.
- Most PPA contracts will try to provide a clear value to the customer during the first year of the contract (with the value during subsequent years being controlled by the utility's electricity sales price and the PPA escalator clause, as discussed in the above paragraph). For the LMI community, MEA will incentivize savings that exceed 15% below the utility's Standard Offer Service (SOS) rate. The greater the saving, the greater the incentive.
- In FY18, MEA addressed the risk associated with a shorter term of commitment by offering an incentive for shorter term contracts. However, during this initial year of the Community Solar LMI PPA Grant Program (FY 18), MEA determined that all the grantees in this program had already intended to offer relatively short term contracts for the LMI community. Also, those grantees offering the longer terms within this group provided low cost methods for the subscriber to break the contract before the end of term. As such, an incentive dealing with the term of the PPA contract

is not offered as a part of the FY 21 Community Solar LMI PPA Grant Program.

- Under the terms of the PSC Letter Order dated February 12, 2020, the validation of low income subscribers is fairly straightforward. In most cases the subscriber income will be validated by observing eligibility for a state or federal program with income limits at or below the community solar income limits for low income subscribers. Validation of moderate income subscribers may be more difficult, requiring observation of tax or other income documents. Such a review can take considerable time or require the hiring of a third party to review the documents. A Validation Incentive is paid to recompense subscriber organizations up to \$30 per LMI subscriber review. A limit of 350 reviews is provided per project, and this incentive is only paid for reviews actually conducted.

**Analysis:**

**Assumptions:**

Figure 1 provides a graphic of the residential cost of electricity to the average Maryland resident.<sup>3</sup> The absolute value of electricity in 2016 was about \$0.14/kWh, but more important, the rate of growth was about 0.2868 cents per year, a rate of about 1.9%-2.0%. The period of 2007-2012 was associated with the deregulation of the electric industry in Maryland and the economic instability in general. The stable period since 2012 is increasing at \$0.252/year or about 1.8%/year. The subscription incentive will assume an increase in the Standard Offer Service (SOS) of 2%/year and an initial SOS cost of \$0.1400/kWh.

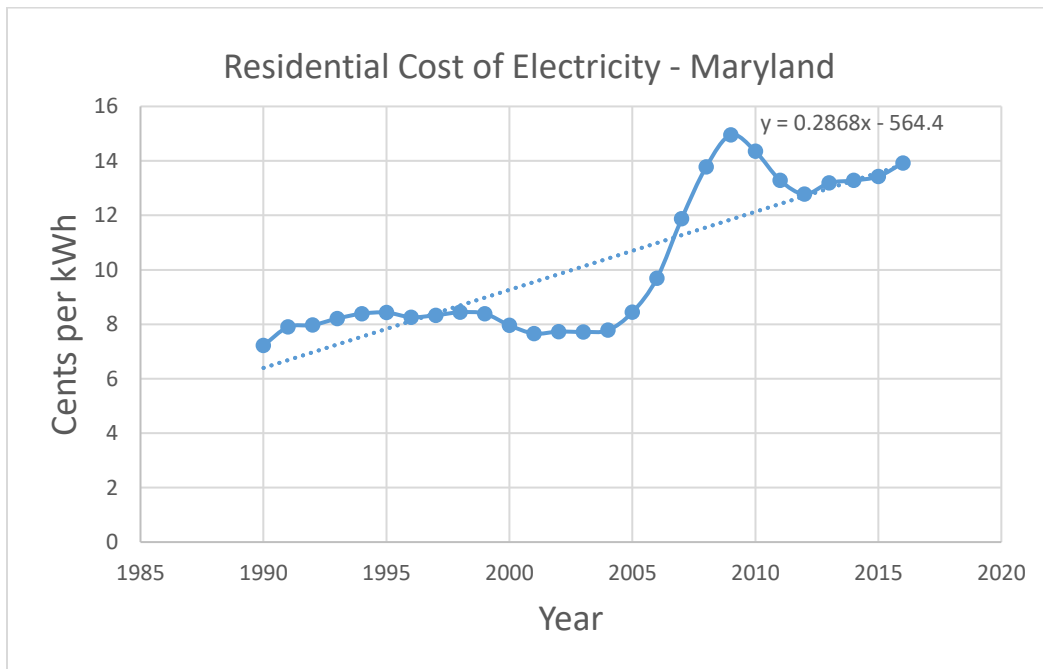


Figure 1: Residential cost of Electricity – Maryland

Normal PPA periods range between 15 and 25 years, with most in the residential sector being in the 20-year timeframe. Many Solar City example problems found on the internet use a 2.9% escalator rate. My discussion with NGOs and potential solar developers in the LMI space indicate a first year discount of

<sup>3</sup> Energy Information Agency website: Average Price by State by Provider (EIA-861) <https://www.eia.gov/electricity/data/state/>

15%-20% under the SOS rate should be expected. The PPA escalator rate is normally between 1 and 5%. The actual rate can be adjusted up or down depending on the initial discount below/above the Standard Offer Service (SOS) rate provided to the consumer.<sup>4</sup> For the purpose of the FY 21 model it is assumed that the **first year discount is 15% below SOS** and that a **2.9% escalator rate** is assigned by the project owner covering the **20-year period** of the PPA. This is the baseline product.

The discount rate is normally selected to account for the time value of money, and reflects the interest rate that the financier would consider reasonable to finance the project (often called the hurdle rate). A value of 10% was selected for this model. The discount rate is used when calculating net present value of streams of funding/cost, which is appropriate for calculation of the subscription incentive and the term incentive. Given that the loan loss reserve funds only insure for a given year; they are not adjusted by the discount rate.

### **Incentive Calculation**

The following example is provided to demonstrate how the grant incentive is calculated. A 2 MW (2,000 kW) array with 30% LMI subscribers would have 600 kW assigned for LMI use. While there are no limits to the number of subscribers per array, MEA will only provide incentives to conduct income verification for up to 350 potential subscribers.

#### **Validation Incentive:**

At least one company was found that would provide 3<sup>rd</sup> party income validation services for approximately \$30/review. Based in part on this general amount, MEA is offering a reimbursement of up to \$10,500 to a grantee for third party (or internal) validation services for potential LMI subscribers. This amount was determined based on an assumption that the grantee pays for 350 reviews at a maximum incentive reimbursement amount of \$30 per review. ( $\$30 \times 350 \text{ subscribers} = \$10,500$ ) Any third party (or internal) income validation cost above \$10,500 will be borne by the subscriber organization.

#### **Subscription Incentive:**

MEA grant funds being offered as a subscription incentive are based on the difference between the Net Present Value of the savings from a base case (which is the savings generally offered in a residential homeowners PPA) and from the proposed PPA from the Subscriber Organization which will be offered to an LMI Subscriber (the test case). The subscriber organization shall describe their time vs. cost table which shall be mapped into the Test Case model of the LMI PPA Incentive Calculator. If a step-down model is used, the time vs. cost table shall be mapped into the Step-Down Case model of the LMI PPA Incentive Calculator. (Incentive caps for step-down projects will be agreed upon on a case by case basis.)

Assume the initial utility rate for electricity is \$0.14/kWh. The base case assumes the utility escalation rate for Standard Offer Service (SOS) is 2.00%/year. The base case PPA escalation rate is 2.90%/year; and the assumed discount rate is 10%. In FY 21, MEA assumes a 15% first year reduction below the utility SOS rate. This produces a net present value of the savings stream for the base case of 14.159 cents per kilowatt-hour (kWh).

Consider a proposed test case that matches the base case but where the subscriber organization agrees to match the utility escalation rate (i.e. 2.00%) and the initial year discount is 25%, the NPV of the savings stream would be 47.495 cents/kWh, for a change of 23.34 cents per kWh. Assuming 600 kW-dc of the 2

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<sup>4</sup> In reality, the discount and escalator rates are adjusted to achieve the required internal rate of return (IRR) required of the financier.

MW-dc array is dedicated to the LMI community, and that the array achieves 1,250 kWh/kWp per year, the LMI portion of the array would put out 750,000 kWh/year. Based on the assumptions above, the total subscription incentive would be \$175,022 (750,000 kWh/year x \$0.2334/kWh = \$175,022).