

RESPONSE TO REQUEST FOR STAKEHODLER FEEDBACK

The Solar Energy Industries Association, the Coalition for Community Solar Access, and the Illinois Solar Energy Association (collectively the Joint Solar Parties) appreciate the opportunity to respond to the questions below regarding DG system specifications. The Joint Solar Parties hope that these comments will stimulate further discussion and looks forward to engaging in those discussions.

- A. System Efficiency as Compared to an Ideal System. One option would be to prohibit program participation from systems failing to meet a threshold efficiency standard. For example, if a system with a given location and size with an ideal azimuth and tilt would create 100 RECs per year, a system that creates less than 75 RECs per year would be prohibited from participation. Under this construct, the ideal system calculation for a given location would be performed automatically by the application portal using PVWatts data.
1. Should an ABP system be compared to a system with an ideal azimuth and tilt for that system's location and be limited to a certain percentage of the production of an ideal system? If so, what would be an acceptable threshold percentage?
 2. Rather than prohibiting participation, could a disclosure requirement scoring that system based on its percentage of optimal efficiency achieve the same goals?

RESPONSE:

The Joint Solar Parties have separate answers for residential systems (less than or equal to 25 kW (AC)) and C&I systems (over 25 kW). However, a few items are common to all systems:

- First, having a less efficient system is not a direct burden on the Adjustable Block Program funding, because REC Contracts ultimately require delivery of RECs under penalty of clawbacks.
- The customer value proposition is an informal barrier to less efficient systems. Generally speaking, the greater the production the greater the savings for the customer—projected savings that can be claimed tend to go down as production decreases.

For residential systems, homeowners generally have little control over the available azimuth or roof tilt due to existing orientation of their home. As a result, a hard ban on an azimuth or tilt outside of predetermined parameters will exclude those potential customers from an onsite solar system.

Specific yield requirements in systems will be a detriment to the goals of the program and could unnecessarily restrict the number of moderate to low income households or homes in urban areas where roofs tend to be smaller, there is more shading obstacles, and where there is no flexibility in how a home is situated on a property.

The Joint Solar Parties do support disclosures. One method of disclosure is to disclose an efficiency factor based on the system's actual azimuth (i.e. efficiency relative to a similarly-situated system and not an ideal south-facing system). In many urban areas, streets (and hence blocks) are not necessarily arranged due north-south or east-west; thus, a directly south-facing

roof is an unobtainable ideal. In the alternative, instead of disclosing efficiency, the IPA could follow the [Massachusetts SMART program](#) (see attached) and include disclosure of production lost to shading in the disclosure instead of efficiency—recognizing shading as something that may be marginally more within the customer’s control than roof tilt and azimuth.

To the extent that an installation on a single location has multiple azimuths and tilts, the efficiency should be calculated for each cluster of panels and weighted by size. Another method would be to color code efficiency based on DC capacity factor, where for bands of production per kW (DC) would correspond to different colors—from green (up to the ideal for the tilt/azimuth) down to red (for abnormally inefficient given the tilt/azimuth).

In any event, the Joint Solar Parties suggest that residential sector-specific literature from the Adjustable Block Program—perhaps a separate brochure for residential customers—explain the basics of solar production so a customer is not only armed with efficiency data but also a sense of what it means, why it is important, and how it should factor into their decision for different financing structures.

The question of how efficiency (or production lost to shading) impacts a customer decision is an important one: efficiency (or production lost to shading) in a vacuum is unlikely to tell the story of whether a specific system is right for the customer because it does not take into account the basic economic proposition. In the view of the Joint Solar Parties, the efficiency is largely in service of the savings or net benefits estimate—an incredibly efficient system is not inherently better than a system of average efficiency depending on the price terms.¹ Focusing too much on efficiency in a vacuum in disclosures might distract from the basic economic proposition.

For C&I systems, the Joint Solar Parties recommend that to the extent there is a comparison between an ideal efficiency and actual efficiency, that the comparison be using whatever estimation methodology used by the Approved Vendor in the Part I application. For example, PVSyst is used by many developers and owner/operators in their production projections, while others may use custom calculations from a professional engineer. Because these are the bases—rather than PVWatts—for many sales presentations, it makes the most sense that any comparison be done using the same production estimation methodology that the Approved Vendor uses for their Part I and/or the methodology used to estimate production for the sales presentation.

As with residential systems, the Joint Solar Parties recommend that any efficiency comparisons be made with a system of similar azimuth—at least for roof-mount systems. There is generally speaking more flexibility for orientation of ground-mount systems, however most customers with the space and resources for a ground-mount system also have access to consultants to further evaluate the value of a system.

B. Capacity Factor. A project’s capacity factor is used to calculate a project’s REC delivery estimate, and thus its overall incentive value.

1. Should there be a minimum capacity factor for projects submitted?

¹ A system’s efficiency does not tell the story of the quality of components, challenges in the installation, needed electrical upgrades, trenching or conduit runs, or other price-related factors.

2. Should an absolute range be drawn for each tracking type (fixed tilt, 1-axis tracking, 2- axis tracking)? If so, what range?
3. Alternatively, should capacity factors that deviate from the imputed PVWatts capacity factor by more than a certain percentage be disallowed? If so, what percentage?

RESPONSE: The Joint Solar Parties recommend against a minimum capacity factor or an absolute range. Annual production estimates already must be displayed on the disclosure form; under existing marketing guidelines the sales presentation has to be consistent with the disclosure form so the production estimates used for savings estimates, payback period, or IRR calculations to the customer would have to be consistent. (*See* DG Marketing Guidelines (March 30, 2021) at §§ 1.B.1.(a)-(b).)

Currently, the Program Guidebook includes a maximum DC/AC ratio and requires affirmative Approved Vendor (or designee) confirmation that a capacity factor deviating by more than 20% (above or below) the PVWatts value was intentional. (*See* Program Guidebook (February 26, 2021) at 33.) The Joint Solar Parties do not object to the Program Administrator having the option to request further support in such instances, which may already be at least implicit in the Program Guidebook. However, a minimum is not necessary and only serves as a barrier to solar installation given the disclosure requirements and that the marketing presentation must use consistent production estimate values as is disclosed.

The Joint Solar Parties also wish to note that capacity factor is not only a product of orientation but also DC/AC ratio. To illustrate, two residential systems could have a 7.6 kW (AC) inverter, but one with 8 kW (DC) of panels and another with 11.5 kW (DC) of panels—the DC capacity factor may be identical but the AC capacity factor may be very different even for the same azimuth, tilt, and shading. Neither system is inherently better or worse for a particular customer that has roof space or orientation constraints, differing load (related to net metering eligibility), or other differences that lead to a different subjective preference.

However, to the extent that the IPA wishes to require a minimum AC capacity factor, the Joint Solar Parties instead of a hard minimum suggest a disclosure in the current disclosure form instead to the effect of the following:

The AC capacity factor (or ratio of estimated production to how much a system could produce through its inverter if generating at full capacity 24 hours a day, 365 days a year) is lower than many comparable systems. Illinois Shines recommends discussing with your sales agent the system design.

This language, or similar language, flags the issue and stimulates a conversation between the customer and the Approved Vendor.

- C. Azimuth. Currently, ABP systems are not limited to any particular azimuth or azimuth range.

1. Should there be a required azimuth range for ABP systems? If so, what should that range be? (for example, should all of or portions of systems with an azimuth less than 90 degrees or greater than 270 degrees be prohibited?)

RESPONSE: Generally speaking, to the extent that the IPA addresses efficiency or production lost to shading, it is unnecessary to require a specific azimuth range. The Joint Solar Parties believe the azimuth itself is not inherently problematic, but is a concern only when viewed with the totality of circumstances of a system. The disclosure form—especially with changes proposed in response to Question 1 above—provides that information. Given non-ideal azimuths do not burden the Adjustable Block Program and may be the result of a customer’s available roof sections or desired total system production, they should not be prohibited from participation in the program. If the IPA is going to direct a prohibited azimuth range, it should be a narrow band around due north, such as 30 degrees in either direction.

D. Payback Period for Purchased Systems

1. Should there be a maximum payback period for ABP systems? If so, how many years/months would constitute an unacceptable payback period?
2. Should an internal rate of return (“IRR”) be allowed as a substitute for simple payback, and if so, what minimum IRR should be set?

RESPONSE: As an initial matter, the Joint Solar Parties take this question to refer to calculated maximum payback period or minimum IRR based on estimates at the time the Disclosure Form is generated. Generally speaking, the structure of the Adjustable Block Program is not set up for that type of ongoing monitoring of system performance and system values that are extremely difficult to measure. Examples of values that are difficult to measure include but are not limited to:

- For a customer whose capacity and transmission charges are passed through, the impact of the solar system on reducing those capacity and transmission allocations; and
- For customers on a time-variant rate (such as Ameren Rider HSS or ComEd Rate BESH, or residential real-time pricing customers), matching the actual avoided cost for non-net metered usage.
- Delivery benefits from a diminished peak usage (for delivery charges calculated on a kW—rather than kWh—basis).
- Avoided volumetric delivery or other charges due to changes in gross (rather than net) usage.

Subject to the clarification above, the Joint Solar Parties oppose a maximum payback period or minimum IRR even based on an estimate. Each Approved Vendor has a different way to model payback period or IRR and—more to the point—each *customer* (particularly larger customers) may wish to see the calculations with different assumptions.

In addition, while this question appears to be specific to system purchases based on the heading, the Joint Solar Parties note that IRR or maximum payback is not the right metric to evaluate a PPA or lease—a more appropriate metric for those is comparing the payment (whether fixed or a formula) with customer benefits, particularly when there is no upfront cost. The Joint Solar

Parties believe additional disclosures on efficiency as recommended above will ensure desired outcomes.

- E. Distributed Generation Disclosure Form. One or more of the items above might require additional disclosure language on the Distributed Generation Disclosure Form. Please specify to which version of the Distributed Generation Disclosure Form your comments relate in your submission (system purchase, lease, PPA, greater than 25kW)
1. Which, if any, of the criteria should be disclosed to customers through the Distributed Generation Disclosure Form if this/these condition(s) are understood by the Program to be sub-optimal?
 2. Additionally, are there any elements of the Distributed Generation Disclosure Form that would benefit from reconsideration, possible removal, or should any additional information be included that is absent from the form?

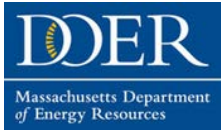
RESPONSE: Please see responses above. To reiterate, the Joint Solar Parties believe the key metrics are estimated production and pricing—elements that are already on the disclosure form—that allow the customer to compare with estimates of benefits (either concurrently for a lease/PPA or over time for a system purchase). While the Joint Solar Parties do not specifically request any changes at this time, if the IPA were to include efficiency or shading loss disclosures they should be added to disclosure forms for systems under 25 kW.

F. Financing Structure

1. Should any of the requirements contemplated herein vary based on financing structure (ownership vs. leases vs. PPAs)? Why might leases or PPAs be handled differently in protecting consumer interests?

RESPONSE: Yes. Leases and PPAs are a very different structure, because most if not all of the benefits captured by the customer are going to be contemporaneous with the lease or PPA charges. Because the pricing is disclosed as part of the Disclosure Form, the customer should be able to compare anticipated benefits with contemporary charges.

A system purchase is different because (unless financed with a loan as part of the transaction) the charges tend to be in advance of revenues—especially if the Approved Vendor remits REC Contract payments to the upon payment by the Buyer utility.



SMART Customer Disclosure Form (Third Party Ownership)

The purpose of this form is to provide consumers with a straightforward, uniform, and transparent resource to evaluate potential solar transactions under the Solar Massachusetts Renewable Target (SMART) Program.

*Except in the case of eligible Low Income Customers, hosting a Solar Tariff Generation Unit owned by a third party may or may not reduce customers' total electricity costs depending on market conditions. Eligible Low Income Customers must be provided a net savings, as required by DOER.

CUSTOMER INFORMATION	SYSTEM OWNER CONTACT INFORMATION
Customer Name:	Company:
Name on Electric Bill (if different):	Street Address:
Site Address:	City, State, Zip:
City, State, Zip:	Phone:
Phone:	Email:
Email:	
INSTALLER CONTACT INFORMATION	PRIMARY SERVICE CONTACT INFORMATION
Company:	Company:
Street Address:	Street Address:
City, State, Zip:	City, State, Zip:
Phone:	Phone:
Email:	Email:
CONTRACT, COST, AND ESTIMATED PERFORMANCE INFORMATION	
System Size (kW DC):	
System Size (kW AC):	
Contract Effective Date:	
Contract End Date:	
Option to Renew: Yes or No	
Option for Buyout: Yes or No	
Starting Rate (\$/month or \$/kWh):	
Rate Increase Frequency (Monthly, Quarterly, Annually, etc.):	
Amount of Rate Increase (\$/month, \$/kWh, or percentage):	
Has a shading analysis been completed for the property? Yes or No	
How much potential solar production is expected to be lost due to shading? (%):	
Estimated Year One Production (kWh):	
Estimated Year One Payments (\$):	
Expected net savings for eligible Low Income Customers:	
Is the contract transferrable? Yes or No	
Where in the contract is the warranty information located?	
Are all warranties transferrable?	
OTHER INFORMATION	
Does the system installation contract conform to the requirements of the State Home Improvement Contractor Law?* Yes or No	

Describe any system performance or electricity production guarantees:
Describe opt-out or early termination terms:
Must the customer continue to make payments in the event of an extended system shutdown? Yes or No
Will a filing at the Registry of Deeds be made pursuant to this system? Yes or No
Describe any protections for the customer in the event that the service provider goes out of business:
Have you and the customer discussed the condition of the roof and the potential for removing and reinstalling the array in the event that repair or replacement of the roof is needed? Yes or No

KEY RESPONSIBILITIES CHECKLIST	PRIMARY INSTALLER / OWNER	CUSTOMER
System Operations and Maintenance		
Submission of Interconnection Application to Utility		
Securing Required Permits		
Obtaining Engineering Approvals		
Scheduling Inspections		
Participation in Inspections		
Application for SMART Program	X	
OWNERSHIP OF INCENTIVES	PRIMARY INSTALLER / OWNER	CUSTOMER
Owner of SMART Incentive Payments	X	
Owner of Investment Tax Credit	X	
Owner of State/Local Tax Credits	X	

*Homeowners have certain rights and protections under the Massachusetts Home Improvement Contractor Law (M.G.L. Chapter 142A). To learn more about the law visit www.mass.gov/consumer.

NOTE: A Renewable Energy Certificate (REC) represents the Environmental Attributes associated with one megawatt-hour of renewable energy as defined by Massachusetts law. RECs generated by the facilities participating in the SMART Program are transferred to the utility company in exchange for the incentive payments made to the facility owner under the program. Therefore, while you are not using the solar power generated by the facility, your involvement in the development of this facility does support solar development in Massachusetts and increase the amount of solar energy consumed by all electric ratepayers in the Commonwealth.

I, _____, hereby confirm that I have received and understand the above information. I further confirm that I have had a chance to ask questions of my provider and have received sufficient answers, if applicable.

Customer Signature		Date

Relevant Links and Contact Information

Department of Energy Resources | Website: www.mass.gov/doer | Email: doer.smart@mass.gov
Attorney General’s Office | Website: <https://www.mass.gov/get-consumer-support>