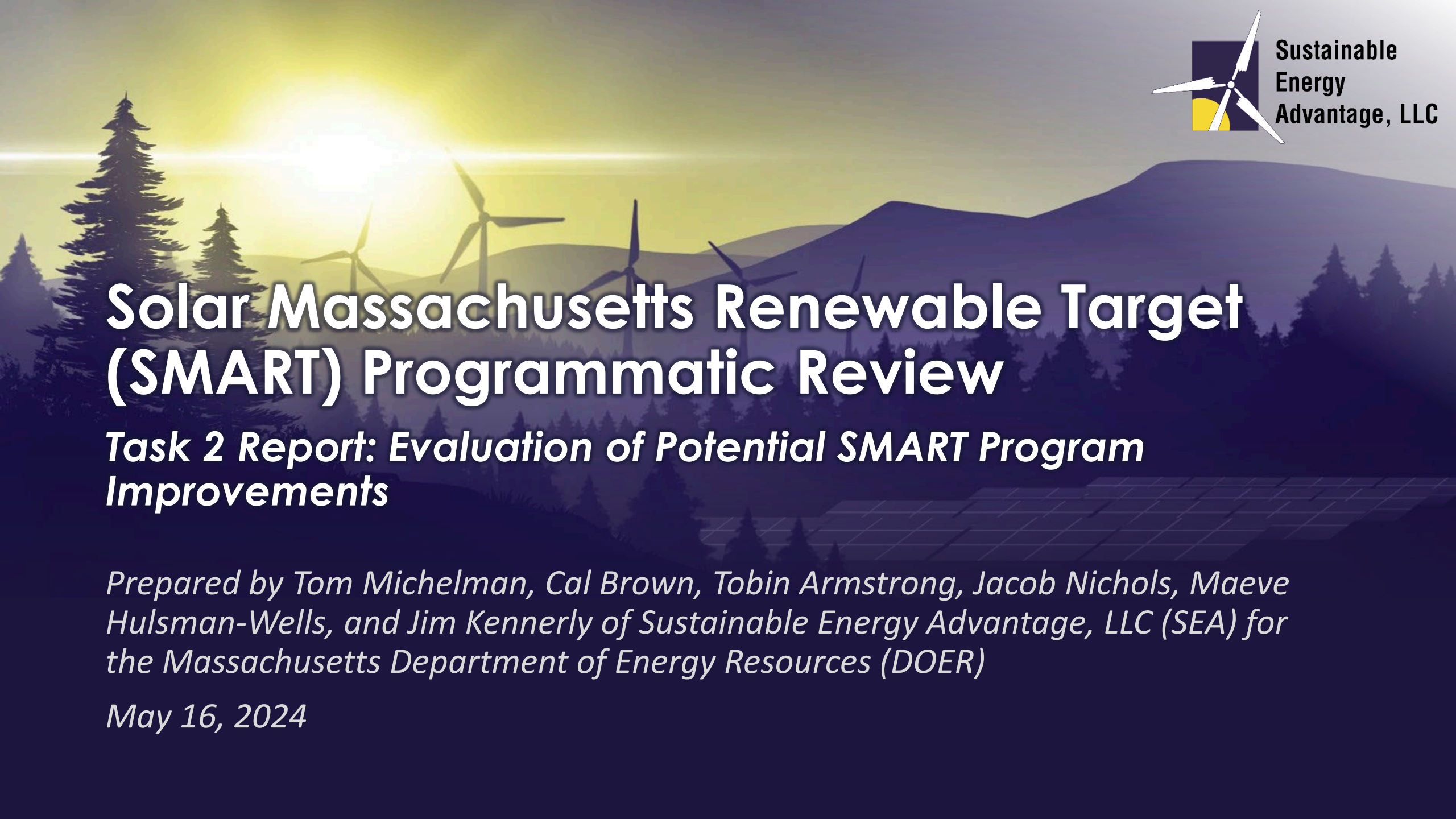

Sustainable Energy Advantage, LLC

Solar Massachusetts Renewable Target (SMART) Programmatic Review

Task 2 Report: Evaluation of Potential SMART Program Improvements

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May 16, 2024

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- Note: Some comments were not summarized because they were outside the domain of the SMART program, which is a solar and storage incentive program. For example, comments about Green Hydrogen were excluded.

Acronyms

- ACP – Alternative Compliance Payment
- AOBC – Alternative On Bill Credit
- ASTGU – Agricultural Solar Tariff Generation Unit
- ATB – Annual Technology Baseline
- BCR – Base Compensation Rate
- BESS – Battery Energy Storage System
- BTM – Behind the Meter
- CCA – Community Choice Aggregation
- CIP – Capital Improvement Plan
- COD – Commercial Operation Date
- CSS – Community Shared Solar
- DERMS – Distributed Energy Resource Management System
- DG – Distributed Generation
- EPA – Environmental Protection Agency
- ESMP – Electric Sector Modernization Plan
- ESS – Energy Storage System
- FTM – Front of the Meter
- GWSA – Global Warming Solutions Act
- ISA – Interconnection Service Agreement
- LCOE – Levelized Cost of Entry
- LICSS – Low Income Community Shared Solar
- PFAS – Per- and Polyfluoroalkyl Substances
- PILOT – Payment in Lieu of Taxes
- PSOQ – Preliminary Statement of Qualification
- PV - Photovoltaic
- REC – Renewable Energy Certificate
- SMART – Solar Massachusetts Renewable Target program
- SOQ – Statement of Qualification
- STGU – Solar Tariff Generating Unit
- VOE – Value of Energy

Select Observations (1)

SEA Observations

- Some states utilize adjustable block program construct, but the benefits of such a construct should be weighed against the time and expense of implementing.
- DERMS curtailment of Distributed Generation presents both benefits and risks and should be examined further.
- FTM project owners receive relatively stable revenue streams as consideration for participating in the SMART program, meaning participation is never without some value, even with $0 incentive payments.
- The structure of the SMART program does present different considerations for BTM systems than FTM systems. While solar projects do have the opportunity to opt out of the SMART program and net meter if offered $0 REC prices for BTM projects, this may not be the most cost-effective method of incenting BTM solar deployment. Retail supply price spikes, followed by retail supply price declines while installed costs remain relatively high has caused misalignment between the realized VOE and BTM incentive rates, which may be addressed by BCR and adder resets discussed in Task 1.

Select Observations (2)

- SEA's revenue requirement analysis was designed to calculate the LCOE required to cover costs plus the risk-adjusted rate of return for a specific project type. Incentive mechanisms that lower the rate of return (e.g., the greenfield subtractor) or raise the rate of return (e.g., an extra incentive for rooftop projects) such that they diverge from the calculated LCOE should be subject to robust stakeholder discussion, and the resulting values should be cost-effective for the underlying policy purpose.
- Any upfront incentive should account for the fact that future revenue is discounted in the cost modeling performed by SEA.
- SEA submitted a Report on a carport adder pilot program in the Rhode Island Renewable Energy Growth Program in 2021 that could serve as an information resource for a carport adder value.
- The EDCs correctly note that there are additional revenue opportunities for storage assets outside of the SMART program since the inception of the storage adder. This projected revenue is not quantified formally but is likely riskier b/c it's not a fixed adder per unit of solar production like the current storage adder. Developers are also correct that the current storage adder does not cover the incremental cost of installing storage, which has resulted in shorter-duration and smaller-capacity batteries.

Select Observations (3)

- There is an inherent tension between least-cost deployment and preferred land uses.
- The “good cause exception” enables DOER to waive regulations in cases where DOER finds that there is good cause to do so. It is not apparent whether DOER has used it to enable solar development on forested, agricultural, or ecologically valuable lands.
- Recommendations for eliminating storage incentives do not account for the overall need for storage to reach climate goals (see the State of Charge and Charging Forward reports).

Select Recommendations

SEA Recommendations

- Indexing compensation rates to publicly available cost drivers is strongly worth considering.
- True-up payments for curtailed generation risk creating perverse incentives by removing the price signals from interconnection constraints.
- Roof replacement is a barrier for some (but only some) rooftop solar installations. If implemented, DOER should consider limiting additional rooftop adder value to projects that require roof or other major upgrades. Illinois low-income Solar for All residential program has an ongoing pilot program to fund roof replacements that could serve as a model and/or lessons learned.
- Given that BTM VOE rates are based on three-historical averages, it may be worth examining a short-term "reset" of the VOE for BTM projects given the historically anomalous basic service prices from the winter of 2022-2023 so the current VOE used in calculating BTM incentive rates more accurately reflects current likely project compensation rates, and potentially doing so again for any future similarly anomalous price impacts.
- The future of the storage adder depends on the policy goals the adder aims to achieve. Overall MW deployed are best facilitated by the current flat incentive structure. Other grid benefits may be captured by aligning the storage adder requirements for battery dispatch with other programs that seek to reduce peak loads.
- DOER should consider increasing the minimum duration for storage.

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SMART Program Review Stakeholder Engagement

Request for Comments from DOER (1)

- The Massachusetts Department of Energy Resources (DOER) is currently conducting a review of the Solar Massachusetts Renewable Target (SMART) program. The primary areas of focus of the review include, but are not limited to:
  - Evaluation of current solar costs and project revenue requirements across sectors
  - Evaluation of potential SMART program improvements
- On December 21, 2023, DOER issued a Request for Comments from stakeholders pertaining to potential SMART program improvements
  - A list of the questions included in the Request for Comments is provided in the next slides
- The deadline for the Request for Comments was February 2, 2024, though limited extensions for some stakeholders were granted until February 9
- In total, DOER received 252 stakeholder responses (~80 unique responses), a significant subset of which were near-identical comments submitted via form emails
  - A list of stakeholders that submitted responses is provided later in this section

Request for Comments from DOER (2)

1. The SMART program currently provides added incentives for certain project types, including building mounted, canopy mounted, landfill, brownfield, agricultural, floating, community solar, and projects serving low income or public entities, projects with energy storage, and axis tracking. DOER seeks additional feedback on changes or improvements that will advance achievement of the Commonwealth's 2050 GWSA mandates while balancing land use, equity, and economic considerations.
   A. What project type incentive changes could improve program outcomes?
   B. Should other project types also be prioritized?
2. The current SMART program structure includes a declining block model. Is a structure with fewer blocks and a greater decline between blocks preferable to a greater number of blocks with a smaller decline between blocks? Are there any other modifications to the declining block model structure that could more effectively support solar development?
3. Are any eligibility criteria in the SMART program a barrier to participation? What are they, and how would you address these barriers? How would you streamline these eligibility criteria?
4. Is the current SMART reservation period (excluding any blanket extensions) adequate given current development and construction timelines? If possible, please provide a representative project timeline inclusive of key project milestones, such as permitting, procurement, and interconnection, to help inform DOER's understanding of the development process and current project timelines.
5. Are there any emerging technologies or project types that are not currently eligible for SMART that DOER should consider making eligible for the program? Please describe potential project applications, any suggestions for eligibility requirements, and what level of incentives if any would be needed spur project development of the project type.
6. Are program compliance requirements clear prior to program enrollment? What are the key challenges with satisfying the data and/or documentation requirements for various program compliance checks, such as compliance with the energy storage, low-income, or community solar requirements? Are there any modifications you would suggest to DOER's compliance processes, or alternative data/documentation you believe could satisfy the requirements?

Request for Comments from DOER (3)

7. Are SMART application processes and requirements clear? Is communication between applicants, the Solar Program Administrator, and DOER clear and effective? Please describe any improvements you believe could be made to the SMART application process.
8. Are there solar canopy project types that currently fall outside the SMART program's definition of Solar Canopy that you believe should be eligible for the Canopy adder? Please provide example project types and describe their benefits.
9. Are there examples of dual use agrivoltaics policies in other jurisdictions that align with Massachusetts' solar and agricultural objectives? Please provide citations and summaries of those policies.
10. What modifications to SMART incentive payment calculations, as currently set forth in 225CMR 20.08, if any, are needed? Please provide examples formulas or calculations for DOER review.
11. How could the program be designed to insulate projects and participants from unforeseen market circumstances that materially impact the value of the SMART program incentive? For example, global events impact supply chain and energy costs.
12. What additional consumer protection measures or modifications to existing measures should the SMART program incorporate to ensure such protections are achieving their objectives, especially as they pertain to low-income customers?
13. Are there any Commonwealth policies (e.g., renewable energy goals, land use priorities, housing policy) that you believe the SMART program inadvertently conflicts with? Please describe any potential modifications to SMART that would alleviate these conflicts.
14. Is there any additional feedback you wish to provide to DOER?

Stakeholders that Responded to the Request for Comments (1)

- Conservation-Oriented Groups
  - American Farmland Trust (AFT)
  - Berkshire Environmental Action Team (BEAT)
  - Berkshire Regional Planning Commission (BRPC)
  - Community Land & Water Coalition (Save the Pine Barrens) (CLWC)
  - Mass Audubon
  - Sierra Club Massachusetts (Sierra Club)
  - The Nature Conservancy (TNC)
- Developers, Market Participants and Their Representatives
  - Ampion
  - Arcadia
  - Aspen Power (Aspen)
  - Berkshire PV Services (BPVS)
  - BlueWave Energy (BlueWave)
  - Coalition for Community Solar Access (CCSA)
  - ECA Solar (ECA)
  - Fermata Energy (Fermata)
  - Finicky Farms (Finicky)
  - Gridwealth
  - Hyperion Systems (Hyperion)
  - Kearsarge Energy (Kearsarge)
  - Klavens Law Group (KLG)
  - My Generation Energy (MGE)
  - New Leaf Energy (New Leaf)
  - Newport Electric Construction (NEC)
  - Nexamp
  - NextGrid
  - Northeast Clean Energy Council and Solar Energy Industries Association (NECEC/SEIA, joint comments)
  - Pope Energy (Pope)
  - PosiGen
  - PureSky Energy (PureSky)

Stakeholders that Responded to the Request for Comments (2)

- PV Squared (PV2)
- Resonant Energy (Resonant)
- Salt Works Energy (SWE)
- SmartRoof Capital (SmartRoof)
- Solar Energy Business Association of New England (SEBANE)
- Solway Development (Solway)
- SunWealth
- SWEB Development (SWEB)

- Elected Officials
  - State Representative Aaron Saunders (D) (Rep. Saunders)
  - State Representative Lindsay Sabadosa (D) (Rep. Sabadosa)
  - State Senator Jo Comerford (D) (Sen. Comerford)
  - The Attorney General's Office (AGO)
- Electric Distribution Companies (EDCs)
  - Eversource Energy, National Grid and Unitil (joint comments)
- Members of the Public
  - 209 responses, including 171 commenting via a form email and 5 commenting via a different form email
- Other
  - Cape Light Compact (CLC)
  - Center for Eco Technology (CET)
  - City of Newton (Newton)
  - Clean Energy Group (CEG)
  - University of Massachusetts (UMass) Clean Energy Extension (UMass CEC)

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Stakeholder Comment Summary

Introduction and Approach to Summarization

- SEA summarized stakeholder comments in the following slides, organized by the following major themes:
  - Structural Program Design
  - Incentive levels
  - Land Use and Conservation
  - Project Qualification Standards
  - Process Improvements
  - Consumer Protection
  - Miscellaneous
- Stakeholder comments are not attributed to individual commenters.
- Comments that were out of scope were omitted.
- Where appropriate, SEA has provided observations on stakeholder comments in blue boxes. These observations are to add analysis or context to stakeholder comments.
- Where appropriate, SEA has provided recommendations on SMART program design in yellow boxes. These are suggestions for DOER to consider as revisions to the SMART program in its next phase.

Structural Program Design (1)

Declining Blocks

- Many developers, the EDCs, conservation groups, and some governmental organizations recommended altering the declining block structure
  - Most of the stakeholders commented that costs have increased in recent years (driven by factors such as interconnection costs, interest rates, supply chain issues, etc.), while the block declines have continued, leading to misalignment of incentive rates and project economics.
  - Several stakeholders argued that because the VOE currently exceeds the compensation rate for new projects in certain blocks (as discussed further in the incentive rate section) there is little incentive for projects to incur the costs of the SMART program and instead will choose net metering where feasible.
- Some stakeholders argued for maintaining steady compensation rates throughout the duration of the program, others urged slower declines between blocks and/or larger blocks. One developer argued for blocks to be time-denominated, instead of capacity-denominated.

Adjustable Blocks

- A large contingent of stakeholders advocated for an adjustable block program with periodic reviews of SMART compensation rates. The commenters argued this structure would provide both more flexibility to DOER to set compensation rates and provide more certainty to developers that their projects would be financeable.

Structural Program Design (2)

- Stakeholders varied in their recommendations for how frequently the review should take place, ranging from yearly to every two years. Stakeholders generally preferred that adjustments to program incentive levels should not require DPU approval for the sake of timeliness.
- Serval interests argued that the SMART program should be aligned with the overall solar deployment targets of the Commonwealth.
- The EDCs recommended an adjustable block structure with automatic price adjustments based on the attainment or nonattainment of targets set using the overall solar deployment goal, similar to the Renewable Market Adjusting Tariff (ReMAT) program in California.

BTM Recommendations, Adder Stacking, and Automatic Adjustors

- Some developer interests recommended increasing the tariff term for < 25 kW projects from 10 to 20 years.
- A subset of developers argued that projects should be able to stack as many adders as they can qualify for, rather than having compensation capped at the incentive for Low-income projects 25 kW or smaller.

SEA Observation: The request that DOER should not permit the incentives to diverge from actual costs, plus risk-adjusted rate-of-return, implies some form of shifting compensation structure over time. We note that the Rhode Island Renewable Energy Growth program, and the Illinois Adjustable Block/Solar For All programs utilize periodic adjustments to program compensation/ceiling prices for solar facilities that qualify in the forthcoming year(s), but that this should be balanced against time and expense of executing the review process. SEA produced a Report in 2023 on REC pricing in the Illinois programs recommending a ReMAT-like compensation adjustment approach.

Structural Program Design (3)

- Several stakeholders from across various interests commented that a form of an automatic adjustor would be beneficial to the program, similar to those recently codified in OSW RFPs, as a way to prevent future misalignment of costs and revenue.

New/Emerging Technologies

- One conservation group, and some developers recommended that DOER examine semi-transparent and vertical bifacial modules for use in the dual-use agricultural project type and clarify the eligibility of said technology.
- One stakeholder argued that the SMART program is not the appropriate vessel to support emerging, untested technologies, and recommended utilizing grant funding for pilot-type demonstrations before incorporating new technology into SMART.

SEA Recommendation: SEA suggests indexing is worth pursuing, as it would address, to a certain extent, the misalignment between costs and incentives in the program currently. SMART BCRs could be indexed to publicly available sources for the costs of panels, steel, labor, land, etc. This could potentially utilize the NREL ATB, and/or actual reported costs. This could be in lieu of or in addition to periodic review of an adjustable block program.

Structural Program Design (4)

- One developer noted that the EDCs are moving to deploy DERMS, which would permit the EDCs to curtail distributed energy systems. This could reduce the potential need for interconnection upgrades and speed deployment of projects but also represent some risk for project owners due to curtailed output. The developer recommended a true-up payment to the project owner for lost generation resulting from curtailment beyond a certain threshold.

SEA Observation: Curtailment from DERMS represents a novel issue for solar production and should be investigated further. As noted by the commenter, DERMS could permit faster and less expensive interconnection, but also present an uncertain amount of risk for project owners. This risk could present barriers or risk premiums to financing solar projects if investors are unsure how much curtailment is typically expected.

SEA Recommendation: A true-up payment for curtailed generation presents the risk of a perverse incentive by removing the price signals from interconnection and should not be offered or if offered would require strict guardrails. Potentially, a project sponsor could site a project in an area with little to no grid headroom, agree to curtailment to receive relatively quick and inexpensive interconnection, and make the same revenue as a project sited on a less congested area of the grid through true-up payments.

Incentive Levels (1)

Overall compensation

- A large portion of developer, and EDC, and governmental stakeholders commented that current compensation under the SMART program has made the financing and deployment of solar and storage assets challenging, and recommended increases to compensation rates.
- Several of the developer and governmental interests remarked that incentive payments for many projects are zero because of historically high basic service prices in the 2022-2023 calendar years. The VOE calculation is used to set incentive rates. Stakeholders commented this is a particular issue for BTM projects which lock in incentive rates based on a three-year trailing average of the applicable energy prices.
  - A few of this subset of stakeholders recommended resetting the VOE to levels from prior years, and one developer recommended permitting BTM resources to receive real-time adjustments based upon energy prices similar to the incentive for FTM systems.
  - Several stakeholders recommended a minimum incentive payment (particularly for small scale projects). Many stakeholders argued that incentive payments should be at or near actual Class I REC values to incentivize participation in SMART. Some of stakeholders recommended a minimum REC value of (or in one case, above) the ACP amount. The EDCs recommended a lower, 1.0 c/kWh minimum incentive payment.

SEA Observation: Fundamentally, what FTM SMART participants get as consideration for relinquishing RECs is the revenue certainty that the SMART program provides. For FTM projects, when the VOE is less than the total project compensation rate, the incentive payments rise to meet the project's total compensation rate. While we understand developer frustration with $0 incentive rates, the projects likely would secure less favorable financing terms if they relied upon selling RECs in the open market due to risk premiums, and this issue may be addressed by a reset to BCR and adder levels from Task 1. It is unlikely to be a prudent use of ratepayer dollars to set a minimum incentive rate at the ACP. If a minimum REC payment is instituted, the BCR should be reduced by a prorated amount to account for the upside for developers.

Incentive levels (2)

SEA Observation: The structure of the SMART program presents different considerations for BTM systems than FTM systems. BTM incentive rates are fixed over the SMART tariff term, based on the difference between the Total Compensation Rate and the three-year historic average VOE (deemed VOE) at the time of qualification; in contrast, FTM incentive rates vary up or down to meet the Total Compensation Rate throughout the tariff term. Because of that difference, BTM projects are more sensitive to the deemed VOE at the time of program qualification, as low or $0 incentive rates persist even if the realized month-to-month VOE decreases from the time when the project locks in its incentive rate. While solar projects do have the opportunity to opt out of the SMART program and net meter if offered $0 REC prices for BTM projects, this may not be the most cost-effective method of incenting BTM solar deployment.

High BTM VOE rates (based on three-year historical averages of applicable EDC rates), and thus low or zero incentive rates, were not an issue when there were moderately increasing retail rates and fairly steady declining installed costs. However, with the global disruptions to commodities (e.g., natural gas), retail supply rates sharply increased. Retail supply rates have subsequently declined somewhat, while installed costs have risen and remained at high levels as compared to recent, pre-pandemic and pre-Ukraine war levels. Because of this dynamic, the deemed VOE and realized VOE are misaligned. This misalignment is compounded by the rise in installed costs.

If other suggested changes to the SMART program are implemented (e.g., combination of updates to the BCRs for SMART projects and update to the building-mounted adder), it will reset BTM BCRs to meet project revenue requirements. Likewise, any index adjusters with or without periodic review of compensation rates in an adjustable block program may address sharp swings in VOE and/or installed costs if they are implemented.

SEA Recommendation: Given that BTM deemed VOEs are based on three-year historical averages, it may be worth examining a short-term “reset” of the VOE for BTM projects given the historically anomalous basic service prices from the winter of 2022-2023. The deemed VOE used in calculating BTM incentive rates would then more accurately reflect current likely project compensation rates. DOER should potentially do so again (i.e., reset the deemed VOE) for any future similarly anomalous price impacts, potentially when the deemed VOE falls outside a prescribed band.

Incentive levels (3)

Various Adders

- Conservation-oriented stakeholders and some government offices argued that the adders and subtractors for siting and offtake should be adjusted to make it more economical to site projects on disturbed land than greenfields by increasing the greenfield subtractor, decreasing or eliminating the community solar adder, increasing the building-mounted and canopy adders, or some combination.
- Conversely, several developers argued that ground-mounted sites on greenfields should not be "penalized" and that such projects are necessary to reach the Commonwealth's renewable energy goals.
- A developer also advocated for the DOER to eliminate land siting criteria, greenfield subtractors, and land ownership restrictions for public solar and storage projects.
- Some stakeholders, recommended an upfront incentive for smaller project types that have, in their view, historically underperformed, such as building mounted projects under 500 kW. Additionally, some proposed an upfront capacity-based adder for commercial rooftops as opposed to a performance-based adder.

SEA Observation: SEA's revenue requirement analysis was designed to calculate the LCOE required to cover costs plus the risk-adjusted rate of return for a specific project type. Incentive mechanisms that lower the rate of return (e.g., the greenfield subtractor) or raise the rate of return (e.g., an extra incentive for rooftop projects) such that they diverge from the calculated LCOE should be subject to robust stakeholder discussion, and the resulting values should be cost-effective for the underlying policy purpose.

SEA Observation: Any upfront incentive should account for the fact that future revenue is discounted in the cost modeling performed by SEA.

Incentive Levels (4)

Various Adders

- One solar service provider recommended incenting additional low-income customer offtake by providing additional compensation (suggested as $0.039 / W_{DC}) for capacity over 50% of the project's capacity that is subscribed to by low-income customers. The broad strokes of this recommendation were echoed by a conservation group.
- One developer argued that the VOE for R-2 customers is calculated using R-1 rates, which results in incentive payments that do not make it economical to serve R-2 customers, and recommended setting low-income adders sufficient to cover the incremental cost of serving low-income customers.
- Several stakeholders from diverse backgrounds commented that low-income community and property solar uptake has not kept pace with other forms of solar development with offtaker adders, and that this should be addressed for the sake of equity, such as allowing affordable housing to qualify or increasing adder value.
- The EDCs recommended examining whether the community solar adder could be reduced, arguing it increases SMART program costs overall and is the most commonly used adder.

SEA Observation: The developer makes a salient point regarding the incentive payments for R-2 customers being based on R-1 rates, and that this dynamic depresses interest in serving R-2 customers. Of course, customers can change rate classes, so DOER will need to be careful when trying to address this discrepancy in compensation rates.

Incentive Levels (5)

Canopy and Rooftop Adders

- Many stakeholders stated that the canopy adder does not currently compensate for the incremental costs of developing a canopy project, but that canopies represent beneficial land use and should be a priority for the Commonwealth.
- Several commenters argued that the building-mounted adder does not account for roof replacement or other electrical upgrades that are sometimes necessary to install solar on a rooftop, and that DOER should consider this dynamic in the rooftop adder.

SEA Observation: While we acknowledge it is a different program and state, SEA submitted a Report on a carport adder pilot program in the Rhode Island Renewable Energy Growth Program in 2021 that could serve as an information resource for a carport adder value.

SEA Recommendation: Roof replacement for building-mounted solar presents unique challenges. It is unquestionable that in some cases, roof replacement or other upgrades to a building, especially a residential building, are a barrier to solar adoption. However, including these costs in the building-mounted adder for all projects would result in inflated compensation for the projects on buildings that do not require structural or electrical upgrades, which tend to belong to wealthier residents and businesses. Further, some key stakeholders have expressed skepticism about utilizing ratepayer-funded program dollars for non-electrical infrastructure. If roof replacement costs were to be included in the building-mounted adder, DOER should consider limiting additional adder value to projects that require it. We note that the Illinois low-income Solar for All residential program has an ongoing pilot program to fund roof replacements that could serve as a model and/or lessons learned.

Incentive Levels (6)

Storage

- The EDCs observed that there are alternative incentives for storage outside of the SMART program and recommended reexamining the storage adder and potentially reducing it, arguing that "[the Clean Peak Standard], ConnectedSolutions, and ISO-NE wholesale markets should be the primary revenue streams for ESS into the future." The EDCs noted that SMART projects over 500 kW only need to install 25% of the storage DC capacity to qualify for the adder, and that adder value is based upon solar output, not storage usage.
- Conversely, several developer stakeholders argued the storage adder is too low to cover the incremental storage costs at current values, and that it should be increased.
- A few developers recommended reformatting the storage adder to incent discharging around peak load times, similar to the ConnectedSolutions program.

SEA Observation: The EDCs are correct that there are additional revenue opportunities for storage assets outside of the SMART program since the inception of the storage adder. This projected revenue is not quantified formally and is financially riskier (not as financeable) b/c it's not a fixed adder per unit of solar production like the current storage adder. Developers are also correct that the current storage adder does not cover the incremental cost of installing storage, which has resulted in shorter-duration and smaller-capacity batteries.

SEA Recommendation: The future structure of the storage adder depends on the policy goals the adder aims to achieve. If the primary goal is to reach the Commonwealth's storage deployment target, then the current storage adder has the benefit of being simple and easily financeable. If a goal is to capture other benefits, such as reduced installed capacity requirements or reduced regional network service charges, it may be efficient to align the adder requirements with the Clean Peak Standard and ConnectedSolutions dispatch incentives. The program should permit dispatch windows to shift as the needs of the grid evolve. Aligning may allow EDCs to plan on battery dispatch as a firmer resource if all economic incentives are aligned with system peaks.

Land Use and Conservation (1)

Conservation-Oriented Comments

- Most of the conservation groups, as well as three elected officials and ~200 individual members of the public, expressed a desire to steer solar development away from greenfields, especially forested, agricultural, or ecologically sensitive land, and towards previously disturbed sites, such as rooftops, canopies, brownfields, and along roadways.
  - This policy position was expressed to varying degrees, with some calling for an outright ban on ground-mounted solar and storage arrays sited in forest or farmland, and others arguing that the greenfield subtractor should be increased, the siting adders increased, and/or siting restrictions strengthened.
- These stakeholders often pointed to the Technical Potential of Solar Study, the Growing Solar, Protecting Nature Study, the Report of the Climate Forestry Committee, and/or personal experience in arguing that the current SMART program rules are not aligned with the Commonwealth's conservation policy priorities and, as such, undervalue the carbon sequestration benefits of undeveloped land. Some developers and members of the public commented that the Technical Potential of Solar Study overstates the availability of land for solar.
- Some, but not all, conservation-oriented stakeholders acknowledged that these preferred sites entail higher development costs, and therefore higher ratepayer-funded incentives.

SEA Observation: There is an inherent tension between least-cost deployment (large resources on low financial opportunity cost sites with low financial development costs) and preferred land uses (smaller, disturbed land, but with higher financial opportunity uses and higher financial development costs per kW installed). Relatedly, DOER has an obligation to prudently spend ratepayer dollars to reach renewable goals, but, at the same time, community acceptance of distributed generation is an important factor in the success of its deployment.

Land Use and Conservation (2)

- One conservation group, as well as one elected official and ~190 members of the public, urged DOER to remove the "distorted incentive" or "loophole" in which developers claim offtaker adders (e.g., the Public Entity Adder) to exempt a project from, or reduce the impact of, the greenfield subtractor.
- Two conservation groups and 171 members of the public urged DOER to remove the "good cause exception", which DOER may use to exempt projects from the greenfield subtractor.
- Stakeholders also urged DOER to:
  - Address energy storage risks to public safety and the environment (i.e., battery fires and associated pollution) → Some stakeholders recommended the elimination of storage adders in the SMART program (two conservation groups and ~180 members of the public); one member of the public recommended limiting large-scale energy storage systems to industrial areas; and one member of the public recommended requiring storage-specific liability insurance
  - Address PFAS and other chemical pollution caused by coatings on solar panels and broken solar panels, for which the risks are heightened for floating and agricultural solar projects and projects on wetland buffer zones (one conservation-oriented organization and two members of the public)
  - Establish pollinator-friendly project requirements and/or reinstate and increase the Pollinator Adder (two developer interests, one elected official, one other organization, and two members of the public)

SEA Observation: The "good cause exception" enables DOER to waive regulations in cases where DOER finds that there is good cause to do so. It is not apparent to what degree DOER has used it to enable solar development on forested, agricultural, or ecologically sensitive lands.

SEA Observation: Eliminating storage incentives does not account for the overall need for storage to reach climate goals (see the State of Charge and Charging Forward reports).

Land Use and Conservation (3)

Development-Oriented Comments

- Highlighting the often-push-pull nature of this issue, many developer interests advocated for less stringent land-use provisions, such as removing the 50% BioMap threshold and establishing guardrails for solar development in BioMap areas, rather than the current prohibition.
- In arguing for relaxed land-use restrictions, several developer interests claimed that the BioMap Critical Natural Landscape (CNL) layer, which is intended to buffer other regulated land use categories, often overlaps with otherwise suitable sites (e.g., residential areas).
- The same developer interests also noted that BioMap updates that designate additional land as CNL or other regulated land use categories can strand projects that had been in development.

Agrivoltaics

- Regarding solar sited on farmland, many developer interests, as well as one conservation group, advocated for more flexible project qualification standards for agrivoltaic projects as well as less onerous ongoing reporting requirements. These stakeholders argued that overly prescriptive regulations inhibit adaptation to changing market and environmental conditions.
  - We detail some of the specific recommendations in the Project Qualification Standards section.

Project Qualification Standards (1)

Agrivoltaics

- As discussed in the Land Use and Conservation section, many developer interests, as well as one conservation group, advocated for more flexible project qualification standards for agrivoltaic projects as well as less onerous ongoing reporting requirements. Specific recommendations included:
  - Allowing reasonable tree removal to accommodate agrivoltaic projects
  - Clarifying the definition of “comparable crops” and applying the comparable crop standard only to project sites for which the acreage of prime soils previously used for food production exceeds 30 acres
  - Clarifying the definition of “newly proposed” as used in the comparable crop standard
  - Eliminating or amending the “Waiver for Decreased Yield” process to ensure that farmers are not required to maintain a specified level of productivity to remain qualified for SMART, nor required to request approval from DOER or the MA Department of Agricultural Resources (MDAR) to make farm operational changes, nor required to submit such a waiver unless production falls below 50% of historical typical yield or 70% of planned yield
  - Adjusting the minimum height requirement and/or associated waiver request process to ensure that capital costs are commensurate with agricultural benefits
    - One developer argued that certain software and hardware controls on modern PV tracker systems could allow for lower heights by adjusting the panel positions to accommodate agricultural activities, e.g., rotational grazing

Project Qualification Standards (2)

- Eliminating the requirement that the farmland is agriculturally productive prior to applying to participate in the SMART program
- Eliminating the requirement to size annual electric production to 200% of annual load → One developer, as well as one conservation group, argued that the cap limits agrivoltaic development on farms without onsite processing or cold storage equipment
- Replacing the Exception Request requirement for the Maximum Direct Sunlight Reduction Requirements to "demonstrate how *each square foot* … will be used for agricultural production" with a requirement to "demonstrate how *the majority of the area* directly beneath the solar modules will be used for agricultural production and/or demonstrate the improved overall agricultural productivity across the entire field that will result from the proposed design"
- Amending the solar shading tool requirement for dual-use projects such that it is a "design guide rather than a binary test of project qualifications" to permit for more nuanced analysis based upon specific crops and micro-climate conditions

- Two developer interests recommended that DOER establish a pathway to Category 1 Agricultural Land Use qualification for projects that include sheep grazing but do not meet all the Agricultural Adder requirements. Such projects would not receive the Agricultural Adder but would not be subject to the Greenfield subtractor.
- One developer recommended that DOER segment the Agricultural Adder such that smaller projects are awarded higher incentives than larger projects.

Project Qualification Standards (3)

Canopies

- Several developer interests, as well as one conservation group, recommended that DOER allow projects under 25 kW to be eligible for the Canopy Adder.
- Stakeholders of various types proposed many expanded definitions and examples of potential canopy projects not eligible under the current definition. Examples included solar installed over:
  - Transportation infrastructure, such as overpasses, manmade water bodies, roadsides and medians, and private roadways
  - Outdoor material and equipment storage facilities, such as scrap and lumber yards
  - Certain agricultural facilities, such as livestock yards and agricultural canals
  - Outdoor market and event spaces, such as flea markets, playgrounds, fairgrounds, and sports venues
  - Certain outdoor building additions, such as landscaping centers
  - Greenhouses (using integrated semi-transparent solar modules)

Energy Storage

- Many developer interests urged DOER to partially or fully eliminate the co-located energy storage requirement for projects over 500 kW, variously arguing that it is uneconomical (esp. for projects between 500 kW and 2 or 3 MW), that it is challenging for certain project types (i.e., agrivoltaic and floating PV projects), and that the perceived risks dissuade some site owners (e.g., schools and hospitals).

Project Qualification Standards (4)

- Some developer interests recommended that DOER eliminate the 6-hour storage duration maximum, arguing that longer-duration installations have significant benefits to the grid.

Offtaker Adders

- Several stakeholders supported changes to project qualifications standards to support low-income offtakers, including by:
  - Making eligible, or otherwise incentivizing, projects initially owned by nonprofits (e.g., Habitat for Humanity) that ultimately benefit low-income customers but do not currently qualify for the low-income adders
  - Establishing a carveout or separate incentive for LICSS projects for which on-bill credits are delivered at no cost to at least 20% of the qualifying low-income offtaker accounts
  - Allowing low- and moderate-income housing to qualify as low-income customers under the LICSS Adder or to qualify for the Low-Income Adder
  - Expanding the definition of the Low-Income Property Adder to include low- and moderate-income housing not currently covered by M.G.L. c. 40B, § 20, e.g., homeless shelters and certain deed-restricted condominiums

SEA Recommendation: DOER may want to consider increasing the hourly duration requirement for new projects. Two-hour batteries, which developers increasingly prefer due to the currently uneconomical co-location requirement, provide limited grid benefits as variable resource penetration increases. We note, however, that an increased Energy Storage Adder will also mitigate this issue.

Project Qualification Standards (5)

Other

- Many developer interests recommended that DOER allow BTM projects, or all projects, to lock in compensation via a Preliminary SOQ when they submit an interconnection application (potentially with additional conditions, such as proof of site control and/or a nonrefundable fee to discourage speculative projects) due to typically longer and more arduous development cycles.
- Several stakeholders suggested new adder types, including for:
  - Projects associated with, and located within the service territory of, one or more CCAs
  - Both market-rate and affordable multi-family housing
- Some developers proposed allowing CCAs to participate in community solar. Developers also pressed DOER to prioritize LICSS CCA regulations and programs, with the EDCs saying more effective outreach to low-income customers is required.

Process Improvements (1)

Reservation Period/Extensions

- Developer interests generally advocated for a longer reservation period, with opinions ranging from the period being adequate to extending the period indefinitely. Suggestions included:
  - Increasing reservation period for projects larger than 25 kW
  - Aligning reservation period to a typical project timeline
  - Giving developers three years to complete projects
  - Allowing projects to request additional time to account for ESMP and CIP timelines and simplifying the process and/or automating the reservation period to match the ESMP and CIP timelines
  - Improving extension process, especially good cause extension framework and guidance
  - Streamlining the claim review process with timelines that utilities, ClearResult, and DOER must meet
  - Eliminating the qualifier for additional delays due to COVID-19
  - Providing a blanket 12-month extension for all projects
  - Providing an automatic six-month extension for preconstruction seeding and vegetation establishment

Reservation Period/Extensions

- Many developer interests recommended that DOER lengthen the project reservation period and/or establish conditional extensions. These recommendations included, but were not limited to, establishing:
  - A 15-month reservation period
  - An 18-month reservation period – from when the ISA or the PSOQ is received, whichever comes later

Process Improvements (2)

- A 24-month reservation period for projects > 500 kW
- A 24-month reservation period, plus a six-month fee-based extension, good cause exemptions, and an extension to account for interconnection timelines
- A 24-month reservation period, plus an additional six months for projects < 750 kW, public projects, and new construction projects
- An indefinite reservation period
- Several developer stakeholders argued that the extensions would accommodate supply chain issues, slow utility upgrades, internal engineering, and group study timelines.

Community Shared Solar

- Some developers requested that DOER require the EDCs to provide an initial credit allocation to customers within one billing cycle of the commercial operation date. Others urged DOER to allow one time credit transfers from Satellite and Host Credit Banks to realize revenue for credits at their full value and allow Satellite customers to request transfers of excess credits to other accounts. Some developers supported allowing Low-Income STGUs on multifamily properties to be sized according to the total usage of the property, as long as a minimum benefit is allocated to each tenant.
- Many developer stakeholders advocated for allowing CSS providers to submit monthly reallocation submissions instead of capping the submission number, and extending the new CSS customer disclosure form requirements timeline by 90 days.

Process Improvements (3)

- Many developer stakeholders proposed pushing EDCs to offer consolidated billing or net credit billing and urged the DOER to create a working group to address billing and crediting challenges.

Low-Income Customers

- Developer stakeholders proposed several improvements to the process of designating a customer as Low-Income, including:
  - Enabling Low-Income customers to upload geographic eligibility information, potentially via a master spreadsheet, and auditing projects to verify status
  - Allowing Low-Income customers to qualify based on participation in other need-based programs
  - Allowing customers to self-attest their income status to qualify
  - Requiring EDCs to share the meter numbers associated with Low-Income properties with owners of STGUs on Low-Income properties, then using the meter numbers instead of the utility account numbers to allocate credits to units within host properties

Transparency and Utility Data

- Stakeholders of various types proposed several improvements to transparency, including:
  - Creating a website with access to the entire SMART process that includes the application process, notification of deadlines and project milestones, estimated timelines, and the required documentation for each type of exception request with relevant department contracts
  - DOER host quarterly stakeholder meetings to discuss program performance, address challenges, and actionable improvements

Process Improvements (4)

- DOER provide clarity on standards related to the preliminary and final SOQ processing timelines and program compliance requirements and rules, application review and timelines, and SMART application costs
- DOER push EDCs to provide expanded data on LI ratepayer bills and, in general, monthly customer usage data
- Expanded staff support for and tracking from ClearResult
- DOER post current R-2/R-4 rate by utility as a reference rate on the SMART program website
- A SMART representative participate in conversations between the utility and the developer, including greater technical support specifically for the municipal permitting process

Energy Storage

- Many developer stakeholders argued that data requirements are too strict. They proposed that the data reporting responsibility be shifted to the manufacturer and that the 15-minute interval data requirement be eliminated and replaced with, for example, an attestation form and random audits. Largely, stakeholders requested simplification of compliance requirements. A developer claimed there's no way to enter the claim for the storage adder in the portal and requested the DOER address this.

Agrivoltaics

- A developer requested the performance standards for ASTGUs be applicable to all project sizes, not just those over 500 kW.

Process Improvements (5)

Floating Solar

- A developer requested DOER clarify the application process and establish a simplified pre-determination application to designate qualification as a manmade body of water.

Other

- Several developer interests and the EDCs also recommended several other process improvements, including:
  - Improved email processes
  - Allowing projects to lower capacity without withdrawing from its SMART block and restarting the application
  - Eliminating the $376.90 meter socket fee
  - Including AOBC inter-utility transfer
  - Removing the limit on adding or removing an off-taker based adder
  - Adding a net savings check to the application review process for all R-2 projects
  - Spelling out acronyms and including examples or descriptions of projects and milestones in the SMART portal
  - Simplifying the eligibility determination process, especially for solar and storage
  - Consolidating the SMART application with the EDC interconnection application for residential and small commercial projects, and potentially for storage
  - Allowing third-party metering through a Production Tracking System for BTM systems

Consumer Protection (1)

Audits and Noncompliance

- The EDCs advocated for more aggressively penalizing firms that engage in misleading marketing, while members of the public promoted penalizing projects in non-compliance with the loss of existing incentives. Some conservation groups argued that auditing requirements should never be waved.

EDC Engagement

- Many developer interests recommended DOER work with EDCs and the DPU to implement enhancements in host meter bill data shared by utilities and allow more frequent updates to subscriber allocations. Some conservation groups pushed for the EDCs to improve their billing systems and avoid saddling LMI communities and developers with the cost of grid upgrades. Others urged the EDCs to reduce the risk of fees or reporting expenses.

Customer Disclosure

- The EDCs urged the DOER to evaluate the effectiveness of current customer disclosures. Some developers argued that disclosure requirements are already sufficient.

Consumer Protection (2)

Low-Income Customer Protections

- Many stakeholders provided comments on Low to Moderate Income consumer protections and LICSS customer protections.
  - A subset of developer stakeholders offered alternatives or improvements to the form of compensation for Low-Income customers including requiring a fixed percentage discount on bill credits to LICSS customers from system owners or requiring a certain percentage of the incentive go to Low-Income and municipal customers. Members of the public proposed allowing Low-Income customers to own a share of an array rather than receiving a discount on their bill. Largely, stakeholders were concerned with ensuring Low to Moderate Income customers received material benefits.
  - Some developer interests proposed prohibiting credit checks as qualification for Low to Moderate Income customers.

Other

- Stakeholders proposed a variety of consumer protection improvements to SMART regulations including:
  - Requiring manufacturer-supported warranties for solar installations Developing standards for residential installations and installers, salesperson training, contracts, marketing claims, and energy storage systems
  - Increasing transparency by sharing completed applications, notifying host municipalities of key milestones, and posting risk and safety information
  - Prohibiting early termination and exist fees
  - Clarifying the net savings requirements and enforcement process for financed or customer-owned systems

Miscellaneous (1)

Transparency

- Some conservation groups commented that the DOER should publicize SMART application data, like capacity, type and location of individual solar installations, and project-level cost and incentive data. Additionally, some developer interests advocated for the DOER to provide utility data on low-income rate qualification, community solar customers, retail suppliers, and CCA participation.

Community Engagement

- Some conservation groups urged DOER to facilitate greater outreach to towns, local media, town officials, local grassroots organizations, and environmental justice communities during the project planning process. Others suggested that DOER establish an adder for solar projects aligned with demonstrated municipal solar planning processes to ensure permitting runs smoothly at the town-level.
- ~170 members of the public urged DOER to require “meaningful and documented community engagement and municipal approval” prior to approving a project. Elected officials and conservation groups also advocated for greater consumer engagement and education, with some proposing requiring public engagement and official public comment in SMART regulations.

Siting

- Developers also urged the DPU to eliminate the project segmentation adjacent parcel rule and implement the revised single parcel rule passed in 2022 in An Act Driving Clean Energy and Offshore Wind.

Miscellaneous (2)

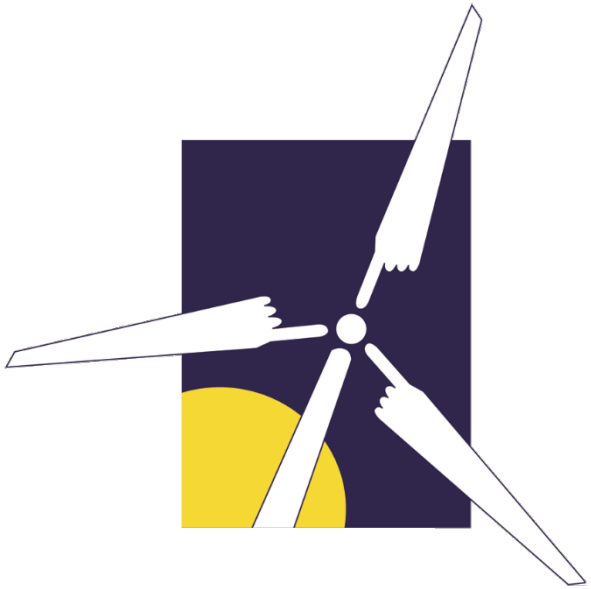
Interconnection

- One developer suggested a Flexible Interconnection Adder to account for regionally-specific hosting capacity. Regionally-specific interconnection fees and compensation rates were also suggested by developers, due to variation in project costs by region. Another proposed that solar greater than 25 kW pay a single interconnection fee on a dollar per kW basis as a line item, and that this proposal be considered in the SEA solar feasibility economic model, to be reviewed every year.
- Several developers urged the DOER to consider working with utilities to address delays in the interconnection process caused by construction requirements, utility upgrades, transmission and distribution impact studies, and Affected System Operator studies. Several developers noted that the long-term interconnection cost allocation policies in the Commonwealth are currently uncertain. Some developers noted that other states, like Texas, model effective interconnection policies.
- One developer also argued that, due to the ESMP timeline and delayed CIP submissions, there may not be additional hosting capacity available until 2028.

Miscellaneous (3)

Other

- Stakeholders requested greater communication and engagement in future SMART program changes, and that the current review consider performance by a series of metrics, including technology type, adder and subtractor, and total land used, and compare Class I solar incentives to SMART performance.
- Developers, members of the public, and conservation groups proposed a variety of improvements to SMART including:
  - Procuring solar from out-of-state projects, which would be eligible to receive an adder for CSS or LICSS
  - Negotiating the PILOT based on estimated project revenue
  - Expanding incentives for Low to Moderate Income customers for pilot programs by streamlining soft and administrative costs of rooftop and canopy solar using funding from the EPA's Solar For All program
- Members of the public expressed concern with the falling total installed capacity rate, the cost of meeting state solar goals (8 GW by 2030), and the long-term certainty and value of projects.



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