BE OUTDOORS
APPALACHIAN MTN CLUB

September 27, 2019

By Email at DOER.SMART@mass.gov
Judith Judson, Commissioner
Massachusetts Department of Energy Resources
100 Cambridge Street, #1020
Boston, MA 02114

Dear Commissioner Judson:

We write to you today regarding the 400-megawatt review of the SMART program. We appreciate the opportunity to submit comments on this important program and we thank you and your team for your work on this issue.

The Appalachian Mountain Club (AMC) understands that renewable energy sources must have a substantive role in reducing greenhouse gas and air pollution emissions and supports increased solar development to bring new non-carbon-based energy online in the northeastern United States. AMC encourages grid-scale solar development on lands that have already been highly impacted, disturbed, or developed, and seeks a balance that discourages conversion of forest land to development. When necessary, appropriate mitigation with a clear nexus to project impacts on ecological, scenic, and/or recreational resources should be required.

Our organization has a deep commitment to reducing our carbon emissions and we are using solar energy to help us achieve this goal. Our eight White Mountain Huts, Maine Wilderness lodges, Three Mile Island Camp, and Highlands Center Lodge all use solar to generate energy. Our Cardigan Lodge in Alexandria, New Hampshire has a 73.2-kilowatt, ground-mounted solar array.

While we support increased solar development in Massachusetts and beyond, AMC is concerned about the current permanent conversion of forests for solar development throughout the Commonwealth. We believe that the SMART program should be directing solar development to locations that have already been developed or compromised. An analysis by Clark University showed that over 3,300 acres of forest have been cleared as a result of large-scale solar development between 2005-2015. (Himmelberger, A., Moody, R., & Pagan, A. (2019). The Distribution and Potential Ecological Impact of Solar Fields in Massachusetts. Unpublished manuscript, Clark University, Worcester, MA.)

A study recently released by Harvard Forest found that photovoltaic (PV) development in Franklin, Hampshire, & Hampden counties is estimated to be converting 92 acres of forest annually. (Johnson, E., Hall, B., Powers, M., Therien, A., & Foster, D (2019). The siting and impact of photovoltaic systems in Franklin, Hampshire, & Hampden counties: A preliminary study. Harvard Forest, Harvard University, Plymouth State University, and Westfield State University).

According to the same Harvard Forest study the majority of PV systems in MA are situated on land that was previously undeveloped, with 77% of systems (952 acres) located on land that was forested (37%), in agriculture (34%), or covered by shrub, scrub, and/or herbaceous vegetation (6%). Photovoltaic siting on developed land, including actively-used parking areas and buildings, comprises only 23% of PV systems.

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This imbalance in the siting of solar projects creates undesirable land use impacts and we appreciate DOER's recognition of those unintended consequences in the proposed SMART program land use components that are intended to more effectively steer projects away from undeveloped areas and toward areas that are already developed or otherwise significantly disturbed. However, the probable effectiveness of DOER's proposed changes remains unclear and the risk of inadvertently and permanently losing land of high ecological value is great enough, we believe that DOER should take several additional reasonable steps, described below, to increase solar energy capacity in the Commonwealth while simultaneously protecting our forests and other natural resources. We also recommend that all solar applications received from the first release of the SMART 400 KW straw proposal recommendations (9/5/2019) be required to comply with the new land use regulations to avoid the unintended consequences that have been recognized.

We are pleased to see that DOER is working to address the municipal zoning bylaw loophole by moving projects within a locally zoned overlay district, from Category 1 Land Use eligibility to Category 2 for all new projects. This addresses the fact that the Greenfield Subtractor failed entirely in the first iteration of SMART program, as over 60% of the solar projects that should have received a Greenfield Subtractor did not as a result of the municipal zoning bylaw loophole. Unfortunately, under DOER's current proposal, we would expect 60% of solar projects to still only get half of the Greenfield Subtractor, regardless of the land use type that would be developed. The Green Communities requirement for a renewable energy zoning already provides an incentive in the form of smoother permitting and these projects should be assessed a full Subtractor based on their land use impacts. We recommend that the municipal bylaw exemption be removed in its entirety and that all projects >500 kW on undeveloped land should get the full Greenfield Subtractor.

DOER proposes moving projects under the Public Entity Adder Category 1. We disagree. There is no need to encourage development of undeveloped public land. If DOER wants to encourage public projects, it should simply increase the Public Entity Adder, as it proposes to do.

We are encouraged that DOER proposes to increase the Greenfield Subtractor x 5 but believe that the Greenfield Subtractor needs to be much larger than that to truly discourage solar development on undeveloped land. Without an accompanying analysis or forecast of probable land use impacts, it is unclear whether increasing the Greenfield Subtractor x 5 will be enough to discourage continued widespread development of undeveloped land, and we recommend DOER take a more conservative approach to help ensure the disincentive works as intended.

It is also inaccurate to define a project area subject to the subtractor as only the land occupied by solar arrays. The full project footprint including infrastructure and access roads should be included in the subtractor calculation. For example, in a 1 MW array, covering 5 acres, there are only 2.5 acres of solar panels, or a disincentive of $.00625/kWh – only 5-6% of the base. If the subtractor were applied to the entire project area this would increase the subtractor by 12% of the base thereby enhancing the disincentive for larger solar development on undeveloped land and more accurately applying them to the area of impact.

In order to facilitate appropriately sited solar development, DOER should increase adders or other incentives for co-locating solar facilities on already developed and/or compromised lands including but not limited to landfills, brownfield sites, abandoned mine sites, highway cloverleaf interchanges, gravel

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pits, sewage treatment plants and other similarly developed municipal lands, above parking lots, on large commercial building roofs, and on business and industrial park lands.

AMC also has several recommendations to improve understanding of the potential land use impacts and build in incentives and disincentives to steer projects to the most desirable places:

- DOER should establish more thorough land-siting criteria for all solar development, using readily available data such as Prime Farmland Soils, Prime Forest Land, BioMap2 Core Habitat and Critical Natural Landscape, Designated Priority Habitat of state-listed rare species, Permanently Protected Open Space, and Land designated as "Forest Land" under Chapter 61.

- As a companion to the land-siting criteria DOER---perhaps with colleague agencies under the Executive Office of Energy and Environmental Affairs---should convene experts in solar markets and experts in ecosystem land values, including resiliency, to conduct an analysis of the most appropriate and least appropriate places for solar development, and identify additional adjustments to incentives that will be effective in steering solar development where it is most beneficial. One outcome should be siting guidance, including a map with Preferred, Not-Preferred, and Indeterminate locations for siting solar development. A good example is the solar siting program developed by the New Jersey Department of Environmental Protection (https://www.nj.gov/dep/aqes/solar-siting.html). AMC believes there is significant enough interest among multiple stakeholders to develop this type of consensus-based approach and that an analysis can be conducted relatively quickly, and to avoid delay of solar projects and sites that are generally known to be preferred (e.g. rooftops, brownfields, landfills, parking lots, dual-use agriculture). AMC recommends an interim phase of adopting regulations that would allow the next "tranche" of solar projects to be proposed for those land use types but pause acceptance of new proposals for previously undeveloped land until the siting guidance described above is available.

- To inform this analysis and before emergency regulations are implemented, DOER should assess and share information about the amount of forest land and other natural lands, such as meadows and shrubland, that have been converted, or will be converted under these proposed changes, to allow a more complete understanding of the potential benefits or shortcomings of the proposed changes and alternatives to more effectively site projects and/or mitigate for unavoidable impacts.

- To that end, DOER should track the conversion of forest land for large ground-mounted solar development throughout the state to better understand and forecast impacts. The Harvard Study revealed that the Executive Office of Energy and Environmental Affairs (EEA) has statewide photovoltaic data created for internal use. EEA should make this data publicly available and should map all the PV projects in the state in order to show the full impact of solar development on greenfields and brownfields. DOER should also provide a spreadsheet, including latitude/longitude or street addresses, for all large solar arrays (>500 kW) built under SMART and SREC programs, so that researchers and non-profit organizations can conduct their own analyses. This data should also be made available as a GIS layer within OLIVER.

- Before expanding the SMART program any further, DOER should work within its Green Communities program, and with statewide stakeholders, to develop an updated solar model bylaw that provides better protections to towns. Small towns throughout the commonwealth

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have been overwhelmed by proposed solar projects. Some of these towns have limited staff and much of the work is done by volunteers. Several towns are being sued by solar developers over their solar by-laws. The Greenfield Subtractor failed entirely in the first iteration of the SMART program – over 60% of projects that should have gotten a subtractor did not, due to the municipal zoning bylaw loophole. Most municipalities that have solar overlay districts in place put them there as a requirement under the Green Communities program, following a model bylaw designed and circulated by DOER. These bylaws and solar overlay districts were designed to regulate development of solar, not to encourage development of undeveloped land.

Thank you again for the opportunity to comment on the 400-megawatt review of the SMART program. We look forward to working with DOER to help Massachusetts reach its emissions reduction goals through the increased capacity of solar development as well as through forests and other natural systems.

Sincerely,

Kristen Sykes
Director of Conservation Strategies

Robert Cherdack
Conservation Chair, AMC Berkshire Chapter

Cc: Secretary Kathleen Theoharides, EOEEA
Patrick Woodcock, EOEEA Undersecretary for Energy
Senator Jo Comerford
Representative Lindsay Sabadosa
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