From: Jesse Robertson-DuBois
To: SitingBoard Filing (DPU)
Subject: Stakeholder comments
Date: Wednesday, May 28, 2025 1:34:26 PM

To the Energy Facilities Siting Board,

Please accept our comments relating to energy siting regulations and guidelines that are in development.

Finicky Farm LLC is a Franklin County-based farm operation specializing in agrivoltaic (agricultural + solar) production systems. We prefer this term to the alternative "dual-use solar" because our operations are first and foremost agricultural in their nature, practices, and environmental benefits, overlain with renewable electricity production. At present, we graze ~155 acres of conventional ground-mount solar facilities across 3 counties, with array sizes ranging from 3 – 26 acres, and we are the approved farm operation in 3 ASTGUs on ~85 acres, two of which are currently in construction and one under appeal. We own and rent another ~60+ acres of agricultural land. There are BESS systems in at least 6 of the arrays.

Based on our experience and associated research, we are uniquely qualified to comment on the real-world agricultural, environmental and community impacts of standalone ground-mount PV and PV + BESS systems. Further, our experience demonstrates that the issues involved in agrivoltaics are applicable to all ground-mount solar sites regardless of whether or not they are initially planned for agricultural use. While many of our comments may not initially appear to be directly applicable to the EFSB's regulatory proposals, all are examples of the types of site-quality factors that drive the agricultural, environmental and community impacts of solar siting and are important to consider in terms of both direct and indirect regulatory consequences.

Before continuing, it is worth noting that we view BESS systems as safe, necessary components of a modern electrical system and we do not have personnel safety or environmental concerns with their installation and use. That said, BESS systems often increase the layout and design complexity and footprint of groundmounted solar facilities and make it more challenging to accommodate continued agricultural use. Generally speaking, rather than PV + BESS, we would prefer to see standalone BESS sited on alternative sites nearby, in order to dedicate more PV acres and optimize layouts for agrivoltaic use. The rest of our comments will focus on PV systems.

1. First, despite much uninformed but nonetheless vocal opinion to the contrary, ground-mounted photovoltaic systems of nearly all types can be designed and constructed to be highly compatible with agricultural use, and almost regardless of design and construction, most arrays can be used as sheep pasture and will be improved by such use. Aside from the 3 ASTGUs, none of the 10 conventional arrays we graze were built or designed for sheep. The variables that impact agricultural productivity of pasture plant species are primarily related to design and construction quality, not the impacts of shade. For crop species, shading becomes important with conventional south-facing fixed-tilt systems, but single axis trackers are highly compatible with most crops even with only modest increases in row spacing and system height. The most important variables are design and construction impacts, and allowing sufficient inter-row width to allow use of efficient agricultural equipment. Put another way, lower-density, widely-spaced arrays that can be farmed will take less land out of production than smaller, narrowly-spaced arrays prohibiting agricultural use, regardless of system height. Similarly, larger arrays are more conducive to agricultural use than smaller arrays. Considering these dynamics, the central consideration in regulating the siting of solar facilities should be the recognition that nearly every solar array can and arguably should be used for agriculture of some form, and siting regulations should be understood within the context of both planned and potential agrivoltaic uses. Given the protections for both agriculture and solar energy facilities as independent uses under state law, the bar on unreasonable regulations of them as a combined use should be understood to be very, very high.

2. The negative design and construction impacts that we observe fall into 3 main categories: planned cost compromises, construction quality control, and adverse regulatory requirements. It is often difficult to differentiate between the first two factors, but the third category is ubiquitous and has the most significant impact on day-to-day agricultural efficiency and productivity.

3. Cost compromises and construction quality control include a wide variety of economically-driven factors that can reduce the agricultural utility of solar sites:
    a. Road placement and laydown areas can have significant, long-term impacts on the agricultural soils if not installed with geotextile separation to allow removal. Similarly, laydown areas to accommodate construction are too-often left in place after construction, sometimes without geotextile separation. In addition, placement of roads and laydown areas in the

middle of fields typically has a greater impact than those located at the periphery. Without imposing any absolute bar, siting constraints for review of the placement and methods of construction of roads and laydown areas in pre-existing fields of prime and important soils may be appropriate, as may requirements for removal and remediation of “temporary” laydown areas.

b. Centrally-located equipment pads for inverters and transformers offer some advantages in terms of cost and/or electrical efficiency, but impose similar additional impacts on agricultural efficiency and long-term impacts on agricultural field soils due to their greater size and central location. String inverters mounted on racking in the array field will reduce equipment pad area and will largely eliminate electrical efficiency losses in siting the transformer and other equipment at the edge of the array, but are slightly more complicated to service and maintain (especially during the growing season), and may require more protection from agricultural equipment and cattle. Given the agrivoltaic tradeoffs in both directions, siting constraints for review of the placement of electrical equipment are appropriate on prime and important soils, but one-size-fits-all regulation could be problematic.

c. Driven-pile vs ground-screw foundations: Use of ground screws versus driven piles is typically a cost compromise when subsurface bedrock or cobbles prevent installation of driven piles, or where low-friction soil conditions require additional pile length and/or cross section. Ground-screw foundations impose significantly greater limitations on agricultural use due to their need for two ground penetrations laterally (across the width of the row), and for cross-bracing both laterally and longitudinally. While sheep can graze around ground screw foundations, cropping systems and cattle grazing may be severely impacted. Siting constraints on use of ground screw foundations on prime and statewide important soils may be appropriate.

d. Above-ground wire management versus buried conduit involves common tradeoffs between the reduced capital expense and reduced soil disturbance of above-ground cable management (e.g., CAB systems), versus the agrivoltaic and operational efficiencies provided by burying conduit. Provided that the locations of buried conduit are known and well-marked, conduit generally should be preferred. However, there are diminishing returns in burying conduit deeper than the electrical code requirement for 18 inches both in terms of cost and soil disturbance. Siting guidelines on prime farmland sites should require review of wire management strategy and layout, with particular attention to locations of above-ground cabling and shallow-buried conduit ductbanks.

e. Compaction on most soils in Massachusetts will naturally remediate over time due to wintertime frost-heaving, for all but the deepest construction-related compaction below the frost line. That said, even short-term compaction has significant impacts on water infiltration and soil biology, and these impacts can persist longer than the physical compaction. Siting guidelines should consider soil type, planned and potential agricultural or habitat-related land uses, and include reasonable requirements for post-construction decompaction where appropriate. Decompaction will also have benefits for water infiltration and stormwater management. Such guidelines should consider engineering requirements that may limit decompaction in close proximity to solar racking structures, as well as the cost tradeoffs between deeper conduit burial and full, site-wide decompaction.

f. Fencing quality is highly variable on solar sites, and low-quality fencing in an agrivoltaic context can cause both operational inefficiencies and significant safety risks to people, livestock, and property. Siting guidelines should specify high-quality fencing for long-term, reliable effectiveness in excluding people and unwanted wildlife (predators and deer), while providing effective enclosure for lambs, poultry, and other livestock.

g. Siting guidelines should go further to ensure post-construction removal of silt fences, straw wattle “socks”, and general cleanup. In addition, siting guidelines should specify the exclusive use of biodegradable materials for erosion control blankets and similar items designed to be left in place.

4. Adverse regulatory requirements provide a frequent unanticipated source of constraints on agrivoltaic uses:

   a. From an agricultural perspective, ground-mounted solar arrays in Massachusetts are typically field-scale, rather than farm-scale, and as a result, restrictions on larger-size arrays typically have a perverse impact on agricultural viability. Massachusetts farms are typically a patchwork of fields, and splitting existing fields into smaller management units is typically damaging to agricultural efficiency and profitability. On the contrary, siting guidelines should consider limiting “partial-field” arrays by reasonably requiring smaller arrays to be designed to preserve existing whole fields as uniform agrivoltaic management units (e.g., by spacing out the rows), rather than cutting a small array out of a larger field. Exceptions should be made where the presence of significantly-distinct soil types and an appropriate array layout would mitigate impacts to agricultural efficiency by allowing more precise management of the different soil areas as an agrivoltaic area and an open-field area.

   b. Zoning setbacks are ubiquitous in local bylaws and are especially onerous for agrivoltaics. Without providing any significant benefits to neighbors, large setback requirements primarily serve to take land out of productive agrivoltaic use or to prevent it from returning to agricultural use. Setback areas typically do not have maintenance requirements, and typically are not maintained except as necessary to maintain the fence. They often become reservoirs for invasive plant species, and eventually grow up into low-quality woods with little habitat value. Instead, fencelines should routinely be pushed out to the limits of the open cleared acreage, including both pre-existing field areas and cleared “shading-easement” areas, to allow the entirety of a site to be managed using agricultural practices.

c. “Wildlife gaps” in fencing should be prohibited in siting guidelines. Relatively few species of concern benefit from them, and they fail to contain sheep or exclude coyotes and other predators, making agricultural use far more difficult. In addition, a wildlife gap in a solar perimeter fence violates the core reason for the fence’s existence: excluding people for safety reasons. Either the electrical code should be changed to allow more modest 4’ agricultural fences as a mere discouragement to human trespassers, or wildlife gaps should be banned as an unjustified and code-violating security and safety risk.

d. Wetland buffers and habitat-related exclusions such as BioMap cause the same problems as zoning setbacks, without providing environmental benefit. First, agrivoltaic solar sites provide a wide variety of habitat, with grazed sites (conventional or ASTGUs) largely duplicating pre-existing meadow habitats, and offering the opportunity to create new meadow habitat in previously-wooded or -brushy sites. The exterior portions of a ground-mounted solar array consist of a code-required fence, and a code-required setback between the fence and any electrical equipment—typically solar panels and racking at the periphery of the site. Pad-mounted equipment is typically located near the center of the site or near the road/interconnection, meaning that in nearly all cases the only infrastructure or equipment that would reasonably be installed in a wetland buffer or habitat buffer are the inert, non-impactful fencing, PV modules, and racking. There is no reasonable environmental reason for excluding these items from these buffer areas. For delineated wetlands and Priority Habitat in non-agricultural settings, it may be appropriate for siting guidelines to exclude installation of fencing and equipment, but in agricultural settings planned or allowing for continued agrivoltaic use, fencing and non-pad-mounted equipment should be allowed to be sited anywhere within the extant agriculturally-impacted area with appropriate construction practices to minimize direct impacts to wildlife to no more than would be caused by routine agricultural practices. (In the real world, constructability and operational efficiency concerns will serve as limiting factors on such installations in wetlands.)

e. Stormwater requirements are almost ubiquitously excessive on Massachusetts solar sites with any topography. When excessive, those excesses are typically among the most environmentally-damaging elements of construction and long-term impact. It is difficult for us to differentiate siting-related drivers of requirements for stormwater basins and other features from environmental regulations as the source of the excess, but at a minimum siting requirements should not cause additional excess impacts. It seems that excessive stormwater designs on agrivoltaicly-managed solar grazing sites ultimately result from a failure to account for the greater infiltration potential of a diverse grazed meadow several frost cycles after construction, as compared to a compacted, mown solar site in the year after construction. Perhaps the simplest solution within the context of siting guidelines is simply to specify that for siting purposes, phase 1 creation of a grazed meadow prior to later, phase 2 construction of a solar facility should be exempted from solar siting and stormwater regulations in regard to phase 1, provided that a reasonable meadow establishment period of 9-12 months is provided between phases.
f. Vegetative screening and structural screens like privacy fences serve primarily to increase costs and/or limit the agricultural use of agrivoltaic sites. We are agnostic about their requirements in non-agrivoltaic solar settings, but given that nearly any solar site can and arguably should be grazed, it's hard to justify screening requirements. Certainly, screening requirements should be treated as a prohibited unreasonable regulation in the context of agrivoltaic uses (both planned conventional solar grazing sites and all ASTGUs).
g. Excess site road requirements are often implemented by towns either as a means of illegitimately increasing costs and/or of legitimately providing for public safety access. All such requirements should be viewed through the lens of agrivoltaic use, to determine whether the public safety concern is a reasonable imposition in balance with agrivoltaic efficiency and the protection of farmland soils.

Thank you for considering our comments, and thank you for your work in developing reasonable and responsible solar siting guidelines that will encourage both agricultural viability and renewable energy development by prioritizing agrivoltaics.

Sincerely yours,

Jesse, Desiree & Elspeth Robertson-DuBois