50 Siting Suitability Standards For Clean Energy Installations

Prepared by No Assault and Batteries, Wendell, MA

***Introduction**: Massachusetts has ample sites for solar to reach the state's greenhouse gas emission reduction goals without further sacrifices of natural and working lands. A survey by the Massachusetts Division of Energy Resources (DOER) found that over 85% of residents believe that the state should strive to site solar on rooftops, parking lots, landfills, and other developed lands, rather than continuing to clear forests and convert productive farmland. We can meet our energy needs without damaging our wetlands, forests, and other natural areas. Deforestation is one of the largest factors in climate change and has been causing climate changes impacting human societies for hundreds of years. Without any change in our siting policy, we could lose another 9,000 acres of largely forested lands in central and western Massachusetts.*

Natural areas are essential for mitigating harms from climate disruption, biodiversity loss, and water cycle interference. According to Mass Audubon, the impacts of hundreds of ground-mount solar projects on our natural and working lands over the last decade have been broad and deep. Our current siting approach is more costly than protecting nature through 2050, Audubon says. Massachusetts has ample sites to locate affordable solar without incurring significant losses of natural and working lands. Over 40,000 acres could host highly cost-effective ground-mounted solar with very low impacts to natural and working lands. An additional 53,000 acres could site low-impact solar. Before ground-mount solar started to proliferate, 60% of our state was forested. Almost 10% of solar acres

built during this past decade overlap with core wildlife habitat, and 11% overlap with critical natural landscapes identified by the state's map of lands supporting high levels of biodiversity.

Massachusetts has already committed to wildland reserves, and energy policy should reflect this commitment. We seek to avoid sites with high-carbon, high-biodiversity and farmland. Under the new clean energy law, local governments should be deeply involved in the creation of content for uniform sets of public health, safety, environmental and other standards, including zoning criteria required for the issuance of permits for small clean energy infrastructure facilities; a common standard application for small clean energy infrastructure facility projects; uniform pre-filing requirements for small clean energy infrastructure facilities; and requirements for public meetings, community outreach, and standards for site suitability.

SITE SUITABILITY STANDARDS

1. Prioritize already disturbed land and the built environment. Siting regulations should avoid natural landscapes, wildlands or working lands, wetlands and forests, in favor of sites such as large rooftops, south-facing structures, parking lots, and brown fields.
2. Minimize distribution costs, reduce wasted heat loss and unnecessary infrastructure. Electric power generation, storage, and usage should be close to population centers and industrial end-users, not in lightly populated, rural areas.
3. Create interconnection rules that support smaller, low-impact solar projects located close to electric loads. Allow distributed and low-impact ground-mount projects in the interconnection queue to connect first.
4. In population centers, electric power generation, storage, and usage should be as close together as feasible.
5. Energy efficiency, climate resiliency, and conservation should be the guiding principles for both site selection and energy development – not profit maximization.

6. Massachusetts should incentivize locally-owned-and-managed distributed energy resources, e.g. micro-grids, on locally approved sites.
7. Siting decisions should be arrived at through a democratic process. In a disruptive global economy, a micro-grid approach would create more resiliency.
8. Natural areas are unsuitable for industrial infrastructure because they are essential for mitigating harms from climate disruption, biodiversity loss, and water cycle interference. Wildlands which contain large amounts of continuous BioMap core habitat, high carbon density and areas marked as priority habitats for rare species in the Natural Heritage and Endangered Species program should be considered unsuitable for energy projects.
9. A single state map for site suitability for clean energy infrastructure should be developed. A single map with overlays for wetlands, roads, etc. to establish "go" and "no-go" areas for clean energy projects may be developed from existing GIS maps. A "go" and "no-go" map would alleviate concerns about loss of home-rule authority. Until such a state map is created, the 2023 DOER Technical Potential of Solar Siting map should be used.
10. Under any state or local consolidated permitting process, the values and principles of existing state or local environmental agencies should be addressed by installations.
11. If multiple projects are proposed in one community, concurrently or over time, there should always be a review of cumulative impacts and a cap to avoid unreasonable cumulative impacts on one community.
12. Municipalities and state legislators should be granted by-right intervenor status to appeal both any state decision in a large scale case, and in any case where an applicant appeals a small scale project to the state. The regulations should provide non-binding mediation on challenges to site suitability, and funding for small communities (under 25,000) for interventions and expert testimony.
13. Municipalities and state legislators should be granted intervenor status when a project is proposed for the area they represent.
14. Incentives should be provided to encourage clean energy products on developed land, canopies, rooftops to support the extra efforts and capacity required of communities under local consolidated siting and permitting. Green Communities incentives should help direct energy infrastructure to the built environment and already developed lands.

15. Solar and accessory projects like battery energy storage systems (BESS) should be sited on the built environment, parking lots, and on municipal buildings.
16. Protections and Exemptions for Farmland and Wildlife Friendly Certification should be maintained. The majority of farmland being lost in Massachusetts is being lost to abandonment, due to viability issues. Incentives should help farms remain viable, requiring that the land be farmed for the next 20 years. Incentives for solar development would cease if the land stops being farmed.
17. Municipalities should be allowed to reasonably limit the acreage of a project. Size of land use should be compatible with local land availability, which varies greatly by town, and should be a home rule decision.
18. Agricultural land that has a minimum of 5 years of active crop production, or is subject to an Agricultural Preservation Restriction (APR) should be not be considered suitable for energy siting. Due to the invaluable carbon sequestration, ecological and habitat functions, and the water quality benefits of forests, these lands should not be considered agricultural for purposes of solar installations. Lands with deeper, stone-free soils should not be taken out of crop production or degraded.
19. Solar racking and panels should be mounted on poles screwed into the ground rather than on concrete pads to preserve soil structure and ensure a potential for a future return to pure agricultural use. Local permit submission should require a post development visualization of the Installation from key vantage points such as public roadways and nearby residential properties.
20. Solar Installations should not be sited upon original slopes of greater than 15-20%.
21. Installations that substantially disturb the existing soil profile and structure should be prohibited. Construction should be accomplished without major earth work. Extensive steep grading is not suitable for energy installations.
22. A 200-foot No Disturb Zone should be strictly maintained between wetlands and water bodies and any earthwork that disturbs the naturally-occurring soil profile.
23. Given access to suitable sites statewide, development in a floodplain should be considered unsuitable. Creation of new impervious surfaces should be minimized and electrical components and batteries excluded in a floodplain. Given present battery technology, no batteries should be allowed on a floodplain, near drinking water wells, or within 400 feet of surface drinking water supplies.

24. Installations should be required to minimize or delete use of chemical-based approaches in the disturbed area under and around solar panels. To protect growth of native perennial plants, mechanical means and/or grazing should be required.
25. Installations should be recessed well back from roads and homes, to prevent significant intrusion into undisturbed and remote forest habitat. Setbacks from a public roadway, and driveway length limits should be determined by local municipal review standards.
26. Only one principal use per lot with consistent frontage requirements for zoned uses should be allowed.
27. Installations should be enclosed by a high chain-link fence. Fencing should be elevated to allow for small animal passage below. Fencing should be black in color for inconspicuousness.
28. Existing trail networks, woods roads or other recreational uses should not be disrupted.
29. Properties containing historic, indigenous, or culturally significant resources should be excluded from the areas proposed to be developed, with sufficient buffer areas locally established on all sides of each historic. indigenous, or cultural resource.
30. Exterior permanently affixed lighting should be either prohibited or minimized. Lighting should be consistent with local zoning provisions. Installations should not normally be illuminated beyond minimum state or federal requirements,
31. Battery energy Storage Systems (BESS) which seek to facilitate the collection of solar energy must be attached to a solar installation on the same parcel, and receive solar power directly from such installation. BESS installations shall be considered stand-alone when they are neither accessory to, nor proximate to, a solar installation, and should not have the protections found in Chapter 40A, section 3.
32. Health and safety regulations for attached or free-standing BESS must be adequate to address the possibility of fire or thermal runaway associated with lithium-ion batteries. Municipalities should be allowed to require strict procedures to minimize the impacts in the event of fire, runoff and infiltration of harmful chemicals or contaminated firefighting water into the soil and groundwater. In smaller towns, the difficulty of securing the sheer volume of firefighting water needed to cool and contain a battery fire should be addressed. Preventive design elements to protect against system failures and

significant negative impacts to public health, safety and welfare must be required.

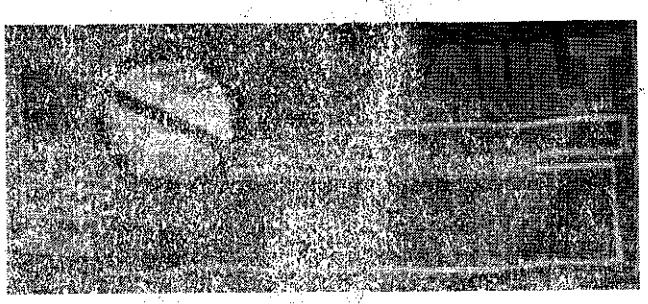
33. Regulations should address the greater potential dangers and challenges of stand-alone BESS installations. Stand-alone BESS present a more significant danger in the event of thermal runaway or fire.
34. State incentives for large ground-mount solar on high biodiversity and other natural and working lands should be phased out in favor of funds for solar installations on low-impact lands and in the built environment.
35. Prioritize projects for interconnection that minimize both grid upgrade costs and land use impacts.
36. Increase SMART incentives for canopy, rooftop, and ground-mount systems sited on already-developed, low-impact lands. Phase out incentives under SMART for installations on any natural and working lands, for BioMap Core and Priority Habitat lands. Create new SMART incentives for residential ground-mount, industrial and commercial rooftop projects with potential to avoid electric distribution upgrades.
37. Issue specific performance goals for rooftop, canopy, and low-impact solar. Insert such goals into the state's *Clean Energy and Climate Plan* goals.
38. Require Mass Save to evaluate rooftops for solar suitability during energy audits. Direct the Clean Energy Center to create grant programs for roof evaluation, repair, and replacement, with priority for low- and moderate-income households and small businesses.
39. Require solar on new buildings, parking lots, and commercial and multi-family developments receiving state funding.
40. Update model local zoning by-laws for solar that require avoidance of natural and working lands, and streamline permitting for solar projects within developed lands. Give cities and towns guidance on solar project decommissioning, battery storage siting and permitting. Decommissioning should include plans for solar PV end-of-life as well as future land uses.
41. Create a statewide planning program to inform and identify zones for deployment of land-efficient, low-impact clean energy resources, including storage and transmission. All new commercial buildings should be required to be solar-ready. Opportunities for redevelopment of commercial sites such as shopping malls, and industrial sites should be required to be solar-ready. Conduct direct outreach to industrial and commercial landowners with the highest potential for ground-mount and rooftop solar that avoids electric

distribution costs. Assess potential for low-impact solar siting on municipally owned buildings, schools, and parking lots.

42. Redirect solar and other clean energy infrastructure towards already-developed lands and the built environment. Create standards for carbon removal from natural and working lands.
43. Create policies for compensating forest landowners and farmers for the carbon and ecosystem services these lands currently provide. Develop new incentives for protecting forests, farms, for long-term provision of carbon removal, biodiversity, climate resilience, and food production. The state should encourage forestry management that maximizes sequestration above current practice levels.
44. Establish a statewide goal for biodiversity that sets clear, measurable goals at timelines aligned with climate planning intervals (e.g., 2030, 2040, and 2050). Establish a permanent statewide funding source, at annual levels commensurate with goals to protect lands featuring highest carbon removal, biodiversity, and resilience to climate change.
45. Promulgate performance standards for natural and working lands that embed long-term carbon removal, biodiversity, water resource protection, climate resilience, and food productivity goals. Require developers to pay fees for losses of forest carbon, biodiversity, and other ecosystem services from conversion of natural and working lands, and use proceeds to establish a revolving fund for protection of at-risk nature and farms. Establish credits that can be applied to mandatory carbon and biodiversity performance standards. Protect the highest-value natural and working lands, at funding levels commensurate with the state's Resilient Land goals to work towards realizing 'no net loss' of forests and farms.
46. The state shall develop metrics and reports contrasting the cost to consumers of grid expansion, including impacts on land, water, habitat, waste, trash, disposal of aging infrastructure, and legal costs, with the cost savings to ratepayers from conservation and sustainability.
47. Require utility companies to report annually on their conservation activities and infrastructure savings.
48. Any proposed site which does environmental harm to sensitive forest, wildlands, natural lands, or habitat, such that replication is required on the same of another parcel, shall not be recommended as a suitable site.

49. Any energy installation which would create a cumulative environmental or public health impact likely to result in an adverse geographic affect, notwithstanding any proposed potential remedial actions to address such an impact, shall not be recommended a suitable site for a small or large energy installation.
50. Any energy installation site which cannot avoid or minimize environmental harm to the greatest extent practicable shall be required to present at least one alternative researched site which is considered to be less harmful environmentally than the submitted project.

Acknowledgements: No Assault and Batteries would like to thank the following individuals and groups for their research on site suitability issues from which we have compiled this list of site suitability standards and related policy issues: Mass Audubon, Harvard Forest, Senator Jo Comerford, Michael DeChiara, Jeff Lacey, Bill Stubblefield, Al Norman, Kate O'Connor, Trees As A Public Good, Nina Keller, Laurel Facey.



No Assault & Batteries www.NABunited.org
PO Box 87, Wendell MA. 01379
NABWendell@crocker.com