Energy Project Siting and Design Standards

Explanation of Siting and Design Standards

Contained within this document are regional standards for the siting and design of new energy projects proposed for the Addison Region. They are drafted for inclusion as an element of Addison County Regional Planning Commission's (ACRPC) energy plan. What follows is a brief note on the purpose of the Standards, suggestions for how to use them, a description of their relationship to other planning documents, and the standards themselves.

Purpose

These standards are intended to guide the siting and design choices made for energy generation, storage, and electric infrastructure projects proposed for the Region. Successful use of these standards helps to ensure that development takes place in an orderly manner that is respectful of the land use goals of the Region. Specifically, these standards support sustainable energy development while protecting farmland, forest blocks, scenic resources, wildlife and its habitat, water resources, public safety, and climate change resilience. They are designed to be read together with regional and municipal maps, plan policies, and applicable state review criteria.

How to Use the Standards

Use these standards to distinguish between projects that are well sited and designed, projects that may be acceptable with mitigation, and projects that are unsuitable for the Region. First, please consult the Regional Siting Framework contained with Table 1. The Regional Siting Framework details three types of locations or "Site Types" for energy developments: Preferred Sites, Possible Sites, and Unsuitable Sites. It also describes the way that proposals at each of the sites would be responded to by ACRPC. The site conditions described within are best understood in tandem with the Energy Maps included within the energy plan's appendix. Next, consider the Project Scale-based Standards included within Table 2. From the perspective of this plan, it is crucial for developers to site projects appropriately and also to "right-size" them for area. Doing so necessitates consideration of project scale as defined by project name plate capacity and includes adopting appropriate project mitigation strategies for the proposed scale. After consulting the project siting, and scale standards, project developers should review the technology specific standards (Table 3). Technological standards, when applied in tandem with project scale and site standards, help to ensure that energy generation, storage, and distribution technologies are deployed, maintained, and decommissioned in the right way, at approriate sizes, and in the right place. If, after considering the information contained within Tables 1 through 3, it is decided that a project will need to adopt mitigation strategies to be considered acceptable by the Region, then project developers should review Table 4. "Mitigation Strategies for Proposed Energy Projects." While not an exhaustive list of approaches, the ACRPC will look more favorably on projects that adopt the strategies included within the Table 4. The Region will consider alternative strategies proposed on a case-by-case basis.

Additional Planning Considerations

Read these standards together with the appendix maps and tables showing known constraints, possible constraints, preferred locations, and other relevant conditions. Where municipalities have duly adopted energy plans or enhanced energy plans that provide more specific local standards or that identify locally significant resources that are different or beyond those contained within the regional standards, developers must follow the local standards if they wish to receive regional support for the project. Finally, new energy projects proposed for the Region must also be in compliance with relevant state and federal regulations and laws if developers wish to receive regional support for the project.

Table 1. Regional Siting Framework

Site Types	Typical Characteristics	Regional Response
Preferred	Previously developed or disturbed sites. Rooftops, parking lot canopies, and carports. Locations near existing buildings, roads, substations, or utility infrastructure. Municipally preferred locations. Sites with natural screening. Existing development co-location.	Projects that are located at Preferred Sites will be viewed as acceptable to this plan based upon location. Additional, scale and technology specific considerations should also be reviewed (see Tables 2, 3, and 4).
Possible	Sites with possible constraints, moderate visibility, active working lands, or site-specific resource or safety concerns that may be capable of avoidance or mitigation.	Possibly Supported, with successful mitigation. Projects at Possible Sites will be acceptable if the applicant demonstrates why the location is appropriate and how impacts will be avoided, minimized, and managed over time. (See Tables 2, 3, and 4 for relevant, additional standards)
Unsuitable	Known constraint locations. Core habitat blocks unless the mapped issue is shown not to exist in fact on the ground or the project clearly avoids the constrained area. Highly visible ridgelines. Forest blocks, riparian, or wetland areas that are key to climate change prevention and adaptation without strong justification. Places requiring disproportionate public	Not Supported. Projects proposed for unsuitable sites will be viewed as antagonistic to this plan.

	infrastructure investment or avoidable system costs.	

Table 2. Project Scale-based Standards		
Scale	**Capacity**	**Description**
Residential	X < 15 kW	Residential scale projects should avoid known and possible constraints and obvious scenic or resource conflicts (see Table 1), but, because of their smaller footprints, residential scale projects will be viewed as compatible with the Regional Plan.
Commercial	15 kW < X < 500 kW	Commercial scale projects must take greater care to avoid unsuitable sites and must adopt appropriate mitigation strategies such as those included in Table 4 to reduce the chance of adverse impacts. Documentation of proposed mitigation strategies will be required for commercial scale projects. Commercial scale projects are viewed to be less disruptive due to scale than larger projects however, and so the mitigation strategies required for a project of this scale to be considered compatible with the Regional Plan will not be as significant particularly if it is well-sited (see Table 1) and meets technology specific standards (Table 3).
Utility	X > 500 kW	Utility scale projects will be held to the highest standards for site selection and mitigation strategy adoption. The larger the project, the greater the expectation that the developer must demonstrate why the location is appropriate, how impacts will be avoided or mitigated, and why the proposal does not impose unfair costs or community burdens. This is the case even for utility scale projects that are sited within preferred locations. Utility scale projects can be cohesive with the Regional Plan though if they are capable of satisfactorily meeting the established siting (Table 1) and technology (Table 3) standards and adopt reasonable mitigation strategies (Table 4).

Table 3. Technology Specific Standards	
Type	**Description**
Solar	Rooftops, parking canopies, disturbed land, brownfields, and other regionally and municipal preferred locations are strongly preferred for commercial and utility scale solar projects. Commercial-scale and Utility-scale solar should be developed within regionally or municipally preferred locations to the greatest extent that is feasible. When proposing a project for open land, developers should avoid unnecessary conversion of productive farmland or ecologically important areas (See Table 4).

	Adoption of agrivoltaic or ecovoltaic project design features must be considered for all projects where feasible and must be adopted as mitigation actions in Possible Site locations (see Table 1). Where practical, design new projects to be storage ready or capable of efficient future interconnection with nearby storage.
Wind	Wind projects on highly visible ridgelines, in view of prominent scenic resources, and in locations that are likely to create substantial bird or bat impacts are discouraged but not impossible. Wind developers should give careful attention to height, sound, shadow flicker, aviation safety, access-road disturbance, and habitat fragmentation concerns. If available technologies can alleviate these concerns, then developers should include a discussion of these technologies as a part of their proposed mitigation strategies. Additionally, new projects should facilitate efficient future interconnection with nearby storage or other grid-supportive infrastructure.
Hydropower	The region would prefer upgrades, efficiency improvements, or carefully designed small-scale additions at already altered sites over new hydropower projects. Projects that would substantially degrade aquatic habitat or increase flood risk will not be supported.
Biomass	Proposed biomass projects will be required to conduct careful review of fuel sourcing, truck traffic, air emissions, noise, ash handling, fire safety, and compatibility with nearby land uses. This plan will prefer projects that use sustainable feedstocks, avoid undue truck dependence, and do not create disproportionate local air-quality burdens.
Battery Storage	This plan prefers battery storage sites that are near existing electric distribution infrastructure, commercial or industrial areas, critical facilities, or existing generation. Developers should consider fire safety, emergency access, mandated setbacks, stormwater, visual screening, and compatibility with neighboring uses when designing projects. Pairing storage with existing or new renewable generation is encouraged where it improves resilience or grid integration.
Distribution and Transmission Infrastructure	This plan prefers the co-location within or adjacent to existing rights-of-way, transportation corridors, or previously altered utility corridors where landscape and resource impacts can be reduced. New transmission facilities should avoid unnecessary skyline exposure, productive farmland or habitat conversion or fragmentation, and should strongly consider undergrounding in particularly sensitive areas where feasible.
Substations and Related Utility Facilities	Locations near existing utility infrastructure, commercial or industrial areas, critical facilities, or other already altered settings with natural or designed screening are preferred for new substations and related infrastructure. Careful attention should be paid to visibility, noise, setbacks, drainage, lighting, emergency access, compatibility with neighboring uses, and opportunities to support resilient and cost-effective grid modernization.

Table 4. Mitigation Strategies for Proposed Energy Projects

Type	Description
Visual and Scenic Resources	Use topography, setbacks, screening, and color and material choices to reduce visibility and avoid skyline intrusion or prominent contrast with the surrounding landscape. Projects should take reasonable steps to avoid shifting visual burdens from the host parcel to neighboring properties or public viewpoints. Where screening or managed vegetation is part of a project's acceptability, a maintenance plan is required that identifies the material or species being used, installation timing, maintenance responsibilities, replacement methods, and invasive-species control.
Agricultural Resources	Avoid unnecessary loss or fragmentation of productive agricultural land. Where projects are proposed on working lands, favor layouts and management plans that maintain meaningful agricultural use or that minimize long-term loss of productive capacity. Consider adopting “agrivoltaic” project designs that are cohesive with agricultural co-production, such as planting compatible crops between panels, using managed grazing for maintenance, supporting nearby honey production, and similar practices to that produce agricultural co-benefits with solar.
Ecological Resources	Take all reasonable steps to retain hedgerows, riparian buffers, drainageways, forest edges, wetlands, and wildlife movement corridors. Avoid habitat blocks unless the mapped issue is shown not to exist on the ground or the project clearly avoids the constrained area. Consider adopting “ecovoltaic” project designs that intentionally maintain or improve the ecosystem function of the site through native and biodiverse vegetation plantings, pollinator habitat, wildlife corridor use, and similar practices that produce ecological co-benefits. For example, where fencing is necessary, design it to reduce fragmentation and allow the passage for smaller animals in ways that are consistent with project safety and security needs.
Stormwater, Erosion, and Soil Stability	Minimize impervious area, unnecessary grading, and soil compaction. Use site design, drainage controls, and vegetation management to reduce runoff, erosion, and sediment transport.
Emergency Planning and Public Safety	Projects should provide safe access, appropriate setbacks, and technology-appropriate emergency response information. Battery storage, biomass, and substation projects warrant especially careful attention to fire safety, access, and incident response.
Decommissioning and Restoration	Projects should be decommissioned and restored at the end of their useful life in accordance with applicable state requirements. Projects should include restoration assurances where appropriate. Utility-scale projects may need to demonstrate that they will be able to pay for decommissioning (although the mechanism by which they demonstrate that ability may vary).