



Landscaping and Site Design Guidelines for Large-Scale, Ground-Oriented Solar Energy Facilities

Since the *Green Energy Act* was passed in 2009, most renewable energy projects are exempt from most *Planning Act* approvals, and have instead been subject to a provincial-led approval process. Part of the Renewable Energy Approval (REA) process set up by the Province of Ontario includes consultation with affected municipalities. Developers of renewable energy projects must submit specific materials to the municipality within a certain timeframe, and consult with the municipality. This includes having the municipality complete the Municipal Consultation Form provided by the Province, which the developer must then submit with their REA application.

The purpose of these guidelines is to outline the minimum standards that the municipality would ask for with respect to the landscaping and site design for solar energy facilities in their comments to the Province as part of the REA process.

The guidelines apply to large-scale, ground-oriented solar energy facilities, where the generation of electricity is the primary use of the property. These types of facilities cover large amounts of land, and can have significant impacts on the surrounding environment, particularly in rural areas that do not generally contain such large-scale facilities. The guidelines are intended as a starting point in helping to mitigate the visual impact that these solar energy facilities have on the landscape.

1. Access

- a) All solar energy project sites will be required to have a civic address. If a civic address does not exist for the property, one will be created by the municipality.
- b) The creation of access points (driveways) to any property, or the alteration of an existing access point, will require an Access Permit from the appropriate approval authority.
- c) The access road bed will be constructed to the appropriate standard to accommodate the weight of a standard-size fire (pumper) truck.

2. Setbacks

- a) Structures and panels associated with a solar energy facility will be set back from all property lines and public road rights-of-way a minimum of 20 metres (66 feet).
- b) Additional setbacks may be required, if identified through the review process, to address certain issues, including, but not limited to, mitigating noise or glare impacts, providing for road or utility corridors, or protecting significant natural or cultural heritage features.

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3. Visual Appearance and Impact

- a) No solar energy facility will produce glare that would constitute a nuisance to occupants of neighbouring properties, to persons traveling on public roads, or within known local flight routes to the Kingston Municipal Airport. Glare resistant solar panels should be used wherever possible.
- b) The visual impact of electrical lines and all other utility connections will be minimized wherever possible (refer to Section 5. Utility Connections).
- c) Appropriate landscaping, screening materials, and architectural treatments will be required to help screen or buffer the impact of the solar energy facility and accessory structures from public roads and adjacent properties (refer to Section 4. Accessory Structures, Section 7. Landscaping, Section 8. Berms, and Section 9. Fencing).

4. Accessory Structures

- a) All solar energy facility buildings and accessory structures, including, but not limited to, equipment shelters, storage facilities, transformers and substations, will be screened from view, particularly when adjacent to a public road or residential property, using a combination of landscaping elements (refer to Section 7. Landscaping, Section 8. Berms, and Section 9. Fencing).
- b) Where buildings or accessory structures are visible from a public road or adjacent property, and cannot be appropriately screened, additional architectural treatments will be required to help the structure blend into the surrounding landscape.

5. Utility Connections

- a) In designing the plans for the connection of the solar energy facility to the electricity grid, the proponent will consider all options, including placing all utility connections (e.g. electrical lines and wires) from the solar energy facility underground, as well as the feasibility of running the lines overhead in the rear of properties, away from public roads.
- b) The placement of utility connections underground will have to take into consideration soil conditions, shape and topography of the site, and any adjacent natural or cultural heritage features.
- c) The proponent will consult with the City regarding its plans for utility connections. The City will confirm whether the utility connections should be underground or overhead, as there may be the possibility of using existing pole systems, and it may not always be suitable to have private infrastructure buried within the municipal right-of-way.
- d) Electrical transformers or substations for utility interconnections may be above ground, if required, but any of these facilities that are visible from a public road or an adjacent property will be

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appropriately screened or architecturally treated (refer to Section 3. Visual Appearance and Impact and Section 4. Accessory Structures).

6. Site Alteration and Stormwater Management

- a) Any removal of topsoil, placement of fill, or alteration of the grade of the land required for the construction or operation of a solar energy facility will require a Site Alteration Permit, in accordance with the City's Site Alteration By-Law.
- b) There will be no negative impact on public rights-of-way or adjacent properties with respect to stormwater runoff from solar energy facilities.
- c) Fixed panel solar arrays will be considered pervious surfaces for the purposes of calculating stormwater runoff and detention. The impervious surfaces will include the support posts and bases of the panels, any roads or impervious driveway surfaces, parking areas, and buildings on the site.

7. Landscaping

- a) A full landscape plan, prepared by a Landscape Architect, will be submitted to the municipality for review and comment.
- b) Where solar energy facilities are visible from a public road or adjacent property, appropriate screening and buffering will be employed to mitigate the presence of the facility through a combination of landforming, vegetation and fencing. This may include wrapping the landscaping treatments from the road frontage around to a portion of the side yards of the property.
- c) Wherever possible, mature trees and vegetation will be preserved, particularly where it can be used to screen and buffer adjacent properties and public roads from the solar energy facility.
- d) The structures comprising the solar energy facility will be constructed and located in a manner so as to minimize the necessity to remove existing trees upon the lot.
- e) Any tree removal on the property will require a Tree Permit, in accordance with the City's Tree By-Law.
- f) Any trees to be retained on-site will be protected from development activity in accordance with the *City's Guidelines for Tree Preservation and Protection*.
- g) Accessory structures on the property that will be visible from a public road or adjacent property will be screened or architecturally treated so that they blend in with the surrounding landscape (refer to Section 4. Accessory Structures).

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- h) The chain link fence surrounding the solar energy facility will be screened from view using a variety of landscaping options, such as berms, vegetation, wood fencing, or living fences/walls (refer also to Section 8. Berms and Section 9. Fencing).
- i) Within the fenced enclosure, and on the grounds of the facility around the solar panel arrays, there should be vegetated groundcover, preferably drought-tolerant species. Interior to the site, the vegetated groundcover, as well as any granular or hard surfaces, should not require any herbicide treatment for maintenance or growth control. A management plan for sustainable maintenance of the site should be produced.
- j) Plantings on the property used to screen and buffer public roads and adjacent properties should include a mix of native coniferous and deciduous trees and shrubs, and allow for the landscaping material to be visually effective in a short period of time.
- k) The planted size of trees and shrubs may vary from site to site, based on proximity, land elevations, and soil types in order to have a greater mitigating effect for the solar energy facility.
- l) Emphasis on year-round screening should be prioritized in plant material selection.
- m) Multi-storey plant material for screening and habitat should be integrated into the design.
- n) There is a preference for native vegetation to be planted. Non-native species may be considered for more landscaped areas. However, whatever species are chosen, they should not be invasive, and they should be appropriate to the existing landscape and natural environment. The Cataraqui Region Conservation Authority (CRCA) and City of Kingston Forestry Division and Parks Development staff should be consulted when determining appropriate plant species.
- o) Wherever possible, landscaping elements used to screen and buffer public roads and adjacent properties should be installed prior to construction.

8. Berms

- a) Berms should be used in appropriate situations, where they will not impact drainage on the site and adjacent sites.
- b) Berms that are constructed should not be so large as to look out of place. Instead, they should be appropriate to the location and surrounding environment.
- c) Contoured landforms with a naturally undulating design, ranging in height from 0.5 metres to 2.4 metres, with cross-sectional slopes not exceeding 1:5, are encouraged to blend (feather out) into the landscape and not present an obvious and jarring intrusion into the landscape.

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- d) Any berms that are installed will be fully landscaped with appropriate vegetation (refer to Section 7. Landscaping).
- e) All berms will be constructed on private property and will not be permitted in the municipal right-of-way.

9. Fencing

- a) While chain link fencing is required by the proponent around the perimeter of all solar energy facilities, it should be screened from view from public roads and adjacent properties.
- b) Additional types of fencing may be used to act as a buffer and screen the chain link fencing. Examples include wood fencing or a living fence/wall.
- c) Any solid fencing used should be installed with other landscaping elements, including vegetation, to soften the appearance of the fence.
- d) All fencing is to be properly installed and maintained in good repair.

10. Lighting

- a) Lighting of a solar energy facility, including entrances and accessory structures, will be limited to that required for safety and operational purposes, and will be reasonably shielded from abutting properties.
- b) Where feasible, lighting of the solar energy facility will be directed downward and will incorporate full cut-off fixtures to reduce light pollution.
- c) Lighting of large-scale, ground-oriented solar energy facilities will be consistent with applicable local, provincial and federal law.

11. Signage

- a) Signage posted on the property will comply with the City's Sign By-Law and may require a permit.
- b) Signage will be posted at the entrance to the site, so that it is clearly visible from a public road or right-of-way.
- c) Signs will only identify the manufacturer, installer, owner and/or operator of the system, and any operational or public health and safety information applicable to the facility.

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12. Site Plan Drawings

Site plan drawings will be submitted to the municipality for review and comment, and should contain the following information:

- An aerial plan of the solar energy facility location, including all properties within 120 metres of the site;
- Property lines, public roads and other physical features of the site;
- Location of access roads;
- Location and spacing of solar panels;
- Location of all accessory structures, including inverters, transformers and substations;
- Location of underground or overhead electrical lines connecting the solar energy facility to any buildings, substations, or other electric load;
- Proposed changes to the landscape of the site, such as grade changes and the removal of vegetation, including the grade six metres onto any adjacent properties;
- Drawing of the solar energy installation showing the proposed layout of the system and the proximity to adjacent properties, and potential shading from nearby structures or trees; and,
- A landscape plan, prepared by a Landscape Architect, showing all landscape elements that will be installed on the site, including, but not limited to, trees and other plantings, fences, berms, exterior lighting, and signage.

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