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Considerations for Zoning By-laws Related to Battery Energy Storage Systems

The IESO plans a rapid expansion of Battery Energy Storage projects. This is a new rapidly changing technology, and most municipalities have not enacted zoning by-laws to govern the placement of these projects in the municipality. Even though a provincial agency is pushing this expansion of this technology, there is no guidance for this process.

The following sections detail some key matters that should be considered when developing zoning by-laws related to this technology:

Prime Agricultural Land – The Provincial Policy Statement that guides all planning activities places a priority on protection of Prime Agricultural Land which is defined as Class 1, 2 or 3 soils. The only exception to the prohibition of development on Class 1, 2 or 3 agricultural soils is expansion of settlement areas. The policy also requires that an assessment of alternative sites be included in any development proposal on agricultural land.

In the current draft of the Provincial Policy statement, battery energy storage systems are permitted in prime agricultural areas, but only as on-farm diversified uses. On-farm diversified uses means uses that are secondary to the principal agricultural use of the property and are limited in area.

Any controls on the development of Battery Storage Systems on Prime Agricultural Land need to reflect the wording of the provincial policy statement, i.e., they should be permitted only when they are secondary to the principal agricultural use and are limited in area.

Setbacks from Existing Structures – In the absence of any provincial directive on this matter, a 500-metre setback should be used for all structures. In their St Clair Township proposals, Enbridge was suggesting that a larger setback of 600 metres was appropriate.

Treatment of Vacant Lots – Regulation 359/09 requires that development Renewable Energy Projects recognize potential future development allowed by the zoning of properties adjacent to these developments by requiring that potential developments allowed by the zoning of vacant lots be considered when calculating setbacks. These provisions ensure that the project needs to be sited so that it does not interfere with the development of adjoining properties. Zoning by-laws for BESS systems should confirm that this provision applies to BESS projects.

Setbacks from Property Lines – Increased setbacks from property lines are required to ensure that an emergency situation at the BESS facility does not affect the ability to use roads, trails and other adjoining uses. The Hydro One guidance on separation from various types of hydro lines should provide guidance on these setbacks.

Meet UL Standards – The zoning bylaw should require confirmation that the project will meet the ANSI/CA/UL9540 standard and be certified under the ANSI/CA/UL9540a testing requirements.

Meets Fire Safety Standards – In the absence of specific direction from the Ontario Fire Marshall, the zoning bylaw should meet the requirements of the US National Fire Protection Association Standard 855 as updated in 2023.

Noise Emissions – Cooling systems needed to maintain battery performance can be a source of noise emissions in both the daytime and overnight periods. In addition, the transformer systems related to these projects can also produce a range of noise emissions. Existing municipal noise control bylaws should be reviewed to confirm that the noise levels from cooling systems and the transformer station will not exceed noise limits allowed by the municipal noise regulations.

Emergency Plan – BESS can present complex emergency situations which local emergency services have not countered previously. The zoning bylaw should require the development of an emergency plan in conjunction with the municipal emergency services. This plan should include regular training of personnel on handling emergencies at BESS facilities and the type of responses that the municipality will provide in response to emergency situations.

Support for Fire Emergencies – The standard approach in the event of a fire in a BESS facility is to let the section involved burn while controlling the spread of the fire to adjacent units. Given the potential for an explosion if water is sprayed on a burning battery, the facility should incorporate dry sprinkler systems which allow water to be precisely directed on neighbouring units in the development to allow cooling without water being applied to the burning unit. The emergency plan should include confirmation that municipal water will be available to the site to allow extended cooling operations.

Environmental Monitoring – As emergency procedures for BESS include the venting of toxic gases from the batteries to the surrounding area, the zoning bylaw should require that the design of the system has procedures to monitor air quality in the area surrounding the project with a process to automatically warn local emergency organizations if dangerous conditions exist and evacuations are required.

Decommissioning – The IESO is taking the position that it is not responsible for decommissioning as it will likely take place after the term of the IESO contract ends. It is operating on the assumption that local by-laws and regulations will govern the process of restoring the site to its previous condition. Before approving a Support Resolution for a BESS project, the municipality should confirm that appropriate plans for decommissioning the project are in place.